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R. F. JOHNSTONE, Editor.

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The Michigan State Agricultural College.

In another part of this journal will be found the report of the President of State Agricultural College, made to the Board of Education on the first of April last, and which is about to be published in the forthcoming volume of the Report of the Superintendent of Public Instruction. Accompanying this report are detailed statements of the expenses which are divided into several heads, but not carried out. We cannot present these accounts in detail, but we have taken pains to separate the amounts paid under each head, and thus present in a more condensed form a summary of the various items of expense. These are as follows:

1. Services and expenses of members of State Board of Education in attending Meetings of the Board.....	\$1,839 79
2. Services and expenses of members of the Executive Committee of the Michigan State Agricultural Society in locating the site for the State Agricultural College, including a survey by S. M. Bartlett and J. C. Holmes.....	833 18
3. Services and expenses of persons in the transactions of specific duties.....	1,609 46
4. Paid publishers of newspapers for advertising proposals for building, dedication and opening of College, &c.....	514 10
5. Paid S. M. Bartlett for his services as agent of the Board of Education in making preliminary improvements on the farm, and superintending the erection of buildings.....	2,424 75
6. Paid Royce and Copeland on contract for erection of buildings.....	38,907 85
7. Expended by agent in making improvements on agricultural farm, including stable and outbuildings, fitting up of laboratory &c.....	8,454 16
8. Paid for furnace and heating arrangements and for gas pipes.....	125 75
9. Salaries of Professors.....	1,200 00
10. Paid for apparatus and chemicals.....	2,297 14
11. Freight, apparatus, implements, stock, provisions, &c.....	816 53
12. Furniture for Boarding House, implements and provisions.....	7,173 43
13. Stock for Agricultural farm.....	777 00
14. Expenses of arbitration with Royce and Copeland.....	378 80
15. Paid A. Wood for making brick used in buildings.....	2,580 13
19. For use of Treasurer of Agricultural College.....	38,781 65
17. For plans for four cottages, and for strengthening roof of College building.....	225 00

\$39,086 21

It will thus be seen that the whole amount paid out by the State from July 6, 1855, which is the

date of the first warrant, after the purchase of the land on which the Agricultural College is located, has been \$89,086.81.

Of this amount it will be seen that expenditures marked 2, 5, 6, 7, 14, 15, are all connected with the construction of the buildings. The remainder, with the exception of 16 has been paid out for the fitting up and the materials and stock necessary to get the institution into working order.

To account for the expenditure of the \$33,731.95, which has been paid to the Treasurer of the College since its opening on the 13th of May 1857. The Secretary of the College makes the following statement, accompanied a list of warrants :

1. Salaries,.....	\$4,210 50
2. Stock,.....	1,369 82
3. Implements,.....	1,192 61
4. Feed for stock,.....	661 76
5. Boarding House Expenses,.....	5,103 04
6. Buildings (including erection of four dwelling houses, repairs on one old dwelling, and work on College edifices and barn),.....	17,778 88
7. Printing,.....	341 68
8. Team labor on the farm,.....	812 75
9. Ditching,.....	429 85
10. Labor,.....	604 59
11. Postage,.....	109 22
12. Transportation,.....	440 03
13. Blacksmithing,.....	200 20
14. Trees and seeds,.....	190 27
15. Books and Stationery,.....	168 92
16. Drain tile,.....	385 06
17. General Contingencies,.....	223 11

\$32,677 28

Of this it will be seen that the buildings have used up better than one half, and that amongst this is a large sum paid out for re-roofing and re-constructing the interior of the College building, which was originally so badly constructed, that it was not fit for the uses to which it was to be applied, nor for any other. There has been used besides the amount from the State Treasury, \$2,117.28, paid by the students for their board. This is about all that we can gather from this report. The report made by the President, points out in general terms the position of the institution on the first of last April. As this is the first business report we have yet had from the College it may be well now to sum up the results we gather from it, and point out wherein it is deficient, as well as make some suggestions in reference to the future action of the board.

The act to establish the Agricultural College was passed on the 12th of February 1855, and provided that the proceeds of twenty-two sections of salt spring lands amounting to \$56,320 should be paid from the Treasury to meet the expenses necessary to be incurred.

At the next session of the Legislature, in February 1857, another act supplementary, was passed, appropriating \$40,000 more to be used in the construction of buildings, purchase of apparatus, payment of teachers and other expenses.

Besides this, there has been paid into the institution by the students for board, and from some other

minor matters, \$2,127.28, up to the first of last April. The whole summed, amounts \$98,447.28.

On the 16th of June 1855, the President, and Executive Committee of the State Agricultural Society met and selected the farm now occupied by the College, which contains 676 57-100ths acres, at a cost of \$15 per acre, or \$10,148.55. Immediately afterwards preparations for the erection of the buildings were commenced, and plans adopted for carrying out the law, and for a judicious expenditure of the appropriation, as far as the Board of Education had had experience in the matter. In performing these duties, it is well known that errors were committed—and for which the institution has had to pay since. Amongst these perhaps, one of the most glaring, was the neglect to put the erection of the buildings under the charge of a thorough architect, who understood his business. This fault alone has cost the college or rather the State some \$5000 ; as immediately after the opening of the buildings for use, it was discovered that the College building would need not only a new roof, but remodelling in the interior, or that it would fall to the ground. The Boarding House, also, had been built without any adequate arrangement for cooking, and it was deficient throughout its interior construction. The expenses which ought to have been provided for in original construction have all been taken out of the means provided by the last legislature for its support, and for the construction of dwelling houses for the professors. In summing up the expenditures, therefore, taking the items from this report, which is decidedly deficient in clearness of detail, and in that orderly arrangement which renders such a document valuable, we find them to be as follows :

Cost of farm,.....	\$10,148 55
General preliminary expenses, occasioned by surveys, attendance of committees, advertising, superintendence, and general transaction of business,.....	6,721 37
Buildings, including the two main buildings, with stables, and outbuildings, and the professors dwelling houses, with all the repairs that have been made,.....	54,648 07
Ditching and drain tile,.....	773 90

Cost of farm and building as they were on the 1st of last April,.....	\$72,287 89
The Stock and Implements cost,.....	3,129 43
Expenses for labor and feed for stock, Blacksmithing and other incidentals,.....	1,949 57
Chemical apparatus, Furniture &c.,.....	9,787 10
Salaries, postage, printing, stationery,.....	6,080 32
Boarding House expenses,.....	5,103 04
Contingencies and Transportation,.....	663 14

\$98,980 49

This shows that on the first of April last the institution had expended all its means, and \$553.21 over. The above arrangement of the accounts also exhibits what may be termed the transient expenses of the institution since its opening not to have been over \$12,000, including the boarding house expenditures.

The permanent investment by the State, therefore, is as yet but a little over \$85,000, for which she has

got an educational institution which will undoubtedly repay her a fair interest, taking the matter in a mere pecuniary point of view, which is the most unjust and illiberal one.

The People of the State, who have a very direct interest in this College, as it will probably have to be supported for some years by direct taxation, have a right to be kept more promptly advised of its operations for the future, than they have been for the past. The first year of its operation has been, as we are well aware, occupied with the work of its inauguration and no result of any importance could be looked for; neither could we look for reports of its progress, with any degree of certainty. We think it should be the duty of the Board of Education to regulate this matter. The people of the State have a right to know at some definite period what has been done with their property, or whether it has been put to the uses which they designed for it. Hence it is suggested that a report of the transactions of the College should be sent on to the Governor of the State by the first of December each year, which would not only contain the proceedings for the year, but also the estimates, for the coming year with a synopsis of the plan of improvements designed to be carried on, the coming season, their cost, the proposed methods of putting them in execution, with a sketch of their utility in promoting the objects of the institution. We have dealt with "glittering generalities" long enough. The farm and the college has been purchased, it has been furnished with buildings and implements, it is stocked, and it has students upon it with a year's experience in the field and in the class room, it is now expected that as each year rolls along, the people who instituted the College, shall not only know what has been done the past year but what is to be done during the one which is to come.

We shall return to this subject again, as it is one that ought to be canvassed with impartiality and calmness, and a just regard to what is practical and possible in its present position.

Report of the President of the Agricultural College made to the State Board of Education.

AGRICULTURAL COLLEGE, }
Lansing, Mich., April 1, 1858. }

To the Board of Education of the State of Michigan.

In accordance with your request, I communicate a brief statement relative to the progress of this Institution during the first year of its existence. I entered upon the duties of my position on the first day of April, 1857, the time fixed upon for the reception of the first class of students, but the college buildings not being tenable at that time, the Dedication was postponed till Wednesday the thirteenth day of May last. A pamphlet was soon after issued, containing a catalogue of the officers and students, a history of the organization of the institu-

tion, the purchase of the farm, the erection of the buildings, the proceedings at the dedication, and other general information, which I herewith remit as a part of this report.

Sixty-one students were received at the commencement of the first term. For the second term, which commenced on the first Wednesday in December, 1857, accommodations were increased by appropriating portions of the building designed for academical uses, to rooms for students, and one hundred were received. They came from as many as twenty-three different counties of the State. Thorough examinations, at one of which your Board were present, took place at the end of the respective terms, which gave general satisfaction. The third term of the institution commences on Wednesday the seventh day of the present month. For twenty-five vacancies, more or less, which will exist, at that time, we find on our files about two hundred applications, and letters of inquiry, with a view to entering the institution. Many of the applicants are from other States. Inasmuch as we are limited in accommodations, the vacant places, in accordance with the requisitions of the law, will be distributed to such *qualified* applicants as appear from counties not represented.

What shall constitute a full course of instruction in the institution has not been determined. It seems to be conceded, however, by all parties responsible for its government, that the full course ought to embrace a period of four years, and that the students should constitute four classes. The Faculty will therefore proceed to classify them in that manner, leaving however in preparatory classes, such as are not deemed competent to enter upon the regular course of studies prescribed. The Faculty have agreed in recommending the adoption of the first Wednesday of December, as the commencement of the Collegiate year. They also advise that degrees be conferred at the conclusion of the four years course, on those who pass satisfactory examinations in the full course of studies prescribed.

The institution was commenced under circumstances the most unpropitious. It was during a season of scarcity in the vicinity, almost amounting to a famine. Prices of every article that entered into the consumption of students, or of stock upon the place, the cost of seed, all kinds of mechanical labor and of transportation, were very exorbitant. There was no land upon the estate which could be deemed fairly arable, unless a few acres of soil rendered barren by exhaustive cultivation. The season was inclement and backward, in consequence of a succession of cold storms. Amid these difficulties it became necessary to organize an Institution on a new basis, and to harmonize a System of Study with a System of Labor. To inaugurate the Institution upon a novel plan, without precedents, and without experience, amid the most unfavorable conditions, was regarded even by friends, as a formidable, if not a hopeless undertaking.

About sixty acres of the Farm have been brought under cultivation. About eighty acres more will be cleared for crops this spring. As much additional forest land as possible will be prepared for a wheat crop during the approaching summer. It has been our policy to clear and prepare the land for crops, as we proceed, much more thoroughly than is usually done on new farms, in order to have it in readiness at the earliest possible day, for varied and interesting modes of culture, for trial of improved imple-

ments, and for comparison of varieties of seeds and breeds of cattle. This is impossible, while the estate remains in a wild and partially subdued condition. Accordingly a considerable portion of the land has been tile drained, and a stump extractor has been put in operation. As a result of this thoroughness on a limited portion of the land, crops have been produced or are growing the first year upon such land as is generally abandoned throughout the vicinity as irrecoverable, or at least unfit for cultivation. Inasmuch as lands of this description were in the immediate vicinity of the College Buildings, it was deemed necessary to subdue them in the outset.

For Summer crops, we had an abundance of potatoes of the finest description, sufficient for the use of the Institution, and seed the present season, turnips, cabbages, and a few acres of corn and Chinese sugar. The latter planted late for fodder only. There were failures in these crops. This success we attribute to a thorough preparation of the soil, and pure seed. Two wheat fields embracing 100 acres, sown to wheat, now promise an abundant

crop. No meadow, nor pasture land, and the Institution being under the necessity of purchasing every article that enters into the consumption of stock, our attention to stock so far, has been directed only to the care and support of such as is deemed necessary to our daily exigencies. The brute working force consists of two pair of horses and six pair of oxen, all sound, in good health, and excellent condition for effective service during the coming season. We have also seven cows upon the Farm.

The Institution is well provided with necessary ploughs, harrows, wagons, carts, sleds, axes, shovels, and horticultural implements. Of peculiarly labor saving machines, Willis' stump extractor, Hedge's "Little Giant" corn and cob mill, and a wood sawing machine have been put in profitable operation. It will be the mission of the Institution hereafter, fairly to test, and publish results of labor saving Agricultural Implements.

No land being in a fit state of preparation, orchards were not commenced during the last season. An extensive Farm orchard designed for raising apples for market, will be immediately commenced, and also a separate orchard designed especially to supply the daily wants of the Institution.

The Chemical and Philosophical Apparatus and Laboratory are in as excellent condition as when purchased.

The Library is not adequate to the wants of the Institution. The books are principally Agricultural, but in that department it is scantily supplied. In the miscellaneous department it is lean and insufficient. It consists of donations from the State Agricultural Society, from the departments at Washington, and a few public spirited individuals and publishers. In response to a Circular addressed to the publishers, twenty-eight Agricultural periodicals, from all parts of the United States, have been gratuitously furnished the Library and Reading Room. The earliest numbers of most of them were accompanied by letters expressive of their high appreciation of the object of the Institution.

The Faculty in employment during the next year, will consist of the President, and Calvin Tracy, Prof. of Mathematics, L. R. Fisk, Prof. of Chemistry, and T. C. Abbot, Prof. of English Literature. With the

exception of J. M. Shearer, and his peculiar employees, and H. Hodges, farmer, who is constantly in the field, no persons will be regularly employed in and about the Institution. It is deemed the wisest as well as the most economical policy to make the Institution independent of aid from beyond its walls, even mechanical aid, as soon as possible. Several of the students are skilled in the use of tools, and during the last winter, unaided, erected a bridge on the estate, across the Cedar River.

Your Board have placed in the hands of J. C. Holmes, Treasurer of the College, since he entered upon the duties, the sum of.....\$31,108 70
He has received, balances from Students
and other minor items,..... 2,127 28

Total,\$33,235 98
My warrants, countersigned by the Secretary, have been drawn upon the Treasurer for,\$33,235 98
On which remains unpaid,-- 451 51
33,222 77

Leaving a balance in his hands of. \$13 21

Vouchers corresponding with every warrant fully paid, will be found filed in the office of the Secretary of the Institution. The Treasurer will furnish his report embracing the expenditures more in detail.

The Secretary of the Institution must by law be one of the Professors. It has been found an impossibility for a Professor, on whom is incumbent a routine of indoor duties and recitations, to perform the multiplied duties which the law imposes on a Secretary. All the facts and vouchers, however, relative to expenditures of money, (which is perhaps the most vital duty of a Secretary,) have been most scrupulously preserved, and reported by him. The record of the daily labor performed by each Student, embracing labor of teams, and where bestowed, is filed in a convenient form for reference. The important facts relative to the progress and history of the Institution are also preserved.

During the past year, four dwelling houses for the use of President and Professors, have been erected. A small wooden farm house, purchased with the land, has been rebuilt and prepared for occupation. The main College Building has been re-roofed, and the interior of the same reconstructed. New and sufficient appliances for cooking with steam have been introduced into the Boarding House, and an unfinished stable completed. This work was executed by direction of the Board of Education, and principally under the supervision of foremen appointed by them.

The plans and policy fixed and determined on before the President and Faculty entered upon their duties, have been carried out. The expenses incurred were inevitable as each necessity succeeded. No one, not conversant with the subject, is aware of the perpetual and unforeseen expenditures required in establishing even a purely Literary Institution. The work before us, was no less than the successful organization and establishment of the first Agricultural College on the continent. That work is accomplished. Indecision, hesitation or division of the funds by your Board, would have so interrupted as to break down and destroy the Institution. The experiment, as the incipient step in a great educational movement would have proved abortive, and the wisdom of the plan and principles, upon which it was founded, would not have been vindicated. The plans once initiated must have been energetical-

ly carried out, or there would have been no College. Hence the appropriations made by the last Legislature have been necessarily consumed.

Such is the condition of the Institution at the commencement of the Second year, and the Third Term of its history. These brief details fail, perhaps, to answer the questions most vital and interesting. Its establishment was regarded as an experiment on this side of the Atlantic. In Europe there are perhaps five hundred Agricultural Colleges, Schools, and Experimental Farms in successful operation. They exist in about every country of Europe, except Spain, Portugal and Turkey. In several of the most powerful nations, especially France, Russia and Prussia, they are regarded as a necessary part of National Education, and are under the supervision of departments of the respective Governments. A bill has just passed the Legislature of the youthful State of Iowa, creating an Agricultural College. This is the second State Institution of the kind in the United States. Agricultural Colleges, the joint work of individual subscribers, and the respective Legislatures, are in a state of progress, and will probably all be set in operation during the next eighteen months, in the States of New York, Pennsylvania and Maryland.

The final triumph of this Institution would be hailed therefore with great satisfaction. The numerous letters addressed to the Faculty from all portions of our country, as well as the still more numerous ungratified applications for admission, attest an earnest solicitude in its welfare, and confidence in its success. The Agricultural classes have long deeply felt a great want, which they saw no way to remedy. The fact that a vast proportion of the industrial population lived under circumstances, and in such isolated positions, as practically to debar them from the advantages of such an education as their calling demanded, has long been keenly deplored by the most discriminating among them. The experiment in which we are engaged is not therefore tested for Michigan alone, but for the Agricultural population of the whole Union. The State is everywhere lauded as exhibiting a bold and comprehensive statesmanship in the establishment of this College, and the public press, as well as a wide correspondence, statesmen on the one hand, and illiterate strong-minded citizens on the other, who equally well however comprehend its necessity and its mission, express their cordial sympathy in its prosperity.

The progress of the Institution, during a single year, is of little importance, compared with those considerations which prove to disprove the wisdom of the plan and principles upon which it is based. The test of a single year is limited and partial. It requires a longer trial and further development. At the same time, it must be acknowledged that the Institution has not only encountered such obstacles as are inevitable to all new enterprises, but others also peculiarly serious and annoying.

The first palpable and valuable result, so far, is, successfully harmonizing a System of Labor with a System of Study. This is vital. A paramount object is, to enable the student to support himself by his own labor, while acquiring his education. At the same time, it is necessary to make that labor attractive and invigorating. Our experience so far, serves to prove that the law wisely requires about the amount of labor requisite to impart additional vigor to both mind and body. The sound health of the students, and the general alacrity manifested among them to embrace either work or study, prove

that the student is actually obtaining that physical education and capacity which is one of the objects of the plan.

A harmonious and wise System of Education should so develop mind and body, that the vigor acquired by one should react upon the other, and the hours spent in physical activity should so impress the mind with clearness and vigor, that the intellectual acquirements should be increased instead of diminished by labors in the field. That such is the result of our limited history, is proved both by the public examinations, and the unanimous testimony of the students themselves.

Whether the student, by three hours labor in summer, and two and one-half hours labor in winter, could board himself, is not sufficiently tested, nor can it be till the farm is thoroughly subdued. For the present, a large share of the labor of the student is bestowed upon improvements, which will enable the Institution to produce at cheaper rates many articles of consumption, which it is now compelled to purchase at market prices. His improvements are made for the benefit of successive classes. His own board must be charged at its present cost, and his labor credited at its value in subduing the farm. It is quite probable therefore, that balances will be charged against the first classes of students, while successive classes, under the superior facilities of the Institution will afford for cheapening the cost of articles of consumption, may easily support themselves. Most of the cost of boarding the students for the past year has been actually an investment in the improvement of the estate. If the friends of the Institution expect it to be self-supporting at this stage of its existence, they expect an impossibility. Production implies fields prepared for cultivation, and facilities which we do not enjoy. It was a dangerous experiment to establish such an Institution on any farm not already, in part, at least, capable of the highest cultivation, and ready to yield the maximum of production under intelligent culture.

The Students generally are of mature years, and came from that class of the rural population deprived of the early advantages, exactly such as it is more peculiarly and specially designed for. Not well grounded in rudimental education, their time in the Institution has thus far been devoted to those elementary branches, which will fit them for acquisitions in those sciences which throw a flood of light upon the culture of the soil. On the other hand, considerable time must elapse before the estate will be sufficiently matured to afford opportunities for those comparisons, tests, experiments and demonstrations in the cultivation of crops,—the preparation of soils, the planting of seeds, the use of labor-saving machines and implements, the breeding and feeding of stock, the use of manures, &c., &c. as the higher degree of Agricultural Education demands. The most fertile and highly cultivated tract of land in the State, would have been none too inviting nor too eligible for the initiation of the enterprise. It is the mission of the Institution to show that Agricultural labors and duties can be rendered dignified, attractive, interesting and productive. The conquest over the forest, is exceptional in the life of a farmer. It often brings to premature graves, the first generation of pioneers, through the severity of the toils and hardships encountered, the mournful evidences of which are strewed all around us, in all directions. In the history of a cultivated region it takes place but once. Yet this Institution is established amid

a forest. What is regarded as disheartening, exceptional to hardy adults, must by necessity be the regular duty of several classes of youthful students. A Model Farm will be demanded at once, and impossibilities expected. Patience therefore, on the part of all who are employed in developing the important movement, and the exercise of a generous charity on the part of the people are alike demanded.

A cheerful acquiescence in salutary Rules and Regulations has so far generally distinguished the students. With few exceptions, they have been inspired with an honorable ambition to perform all their duties, both within and without doors. They have generally expressed an earnest wish to avail themselves of the advantages of a Full Course of Instruction, though many have been compelled by straitened circumstances to abandon that hope.

It was feared even by many sanguine friends of the Institution, that the labor would be viewed as a necessary drudgery to be shunned, and that no discipline would be sufficient to hold students to their responsibilities. So far, we have found it otherwise. Public opinion among themselves holds a great majority to the manly performance their duties. As in wider communities, there must be exceptions, but this appears to be the law of their conduct. Accordingly we are able to show, already, gratifying results of successful labor. By the aid of powerful brute force and the most improved implements, we now have evidence to expect that the students will perform during the same period of time, nearly as much Agricultural Labor as the average of full grown laborers throughout the country, though perhaps that is entertaining a very sanguine expectation.

It is a subject of congratulation, that the Legislature during its recent Extra Session, reserved the State Swamp Lands in the four adjacent townships for the use of the College. Though it is not determined how much of the land will be claimed by right of pre-emption, yet it is probably safe to say, that the College will be entitled to about sixty five hundred acres. How many students could board themselves by their own labor on the present estate must be tested by their own experience, but it would not be safe to place it above two hundred. A full corps of Professors could instruct four times that number.—The Institution should be enabled to breed, raise and feed its own stock and to raise corn, hay and root crops, at the minimum cost of production and thus supply all dairy productions, and animal food and animals, that enter into its use or consumption, as well as render itself independent of fluctuations. Among the Swamp Lands reserved to the College, is a tract of natural meadow of exhaustless fertility, capable of being easily recovered, of more than two thousand acres, which will supply the great desideratum, and enable the Institution to increase the number of students to the maximum that any corps of Professors could instruct. In every point of view this concession must be regarded as invaluable to the Institution, calculated to secure ultimately, triumphant results, and is an evidence of enlightened forecast on the part of the Legislators.

In conclusion I may add, that the Institution should be good enough for the proudest and cheap enough for the poorest; it should afford gratuitous instruction so thorough and comprehensive, as to render its graduates scientific cultivators, and in every sense liberally educated citizens; it should be independent of capricious Legislatures, and of the malice, ignorance or skepticism of foes,—in a word

it should be adequately and permanently endowed.

I remain, with great respect,

Yours, &c., &c.,

JOSEPH R. WILLIAMS,
President.

Enemies of the Wheat Plant.

The Wheat Midge—Erroneously called the Weevil.

Last month we treated of the Mildew or Rust, which has more than decimated the crop of Michigan the present year. We now present some valuable remarks on the wheat Midge, which we take from the very able prize essay, "*On Insects Injurious to the Wheat Crop*," written by the Rev. Geo. S. P. Hill, of Markham, Canada, for the Upper Canada Board of Agriculture. This description is much fuller and more to the purpose than any we have yet seen. It is somewhat long for our pages, but the importance of the subject entitles it to a prominent place in the columns of the agricultural journals published in the wheat growing States:

The WHEAT-MIDGE, (*Cecidomyia tritice*) or wheat-fly, as it is commonly called, is nearly allied to the Hessian fly, or *cecidomyia destructor*, both are de-



1.



Fig. 2.

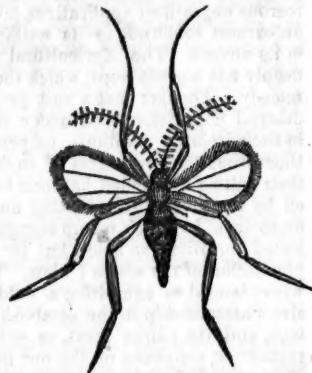


Fig. 3.

1. The Wheat Midge the natural size. 2. Part of the antenna of a female, magnified. 3. A magnified female Clearwinged Wheat Midge.

structive to the wheat crop, but differ in their mode of operation. The larvæ of the Hessian fly feeds upon the stem of the plant, exhausting its juices and causing it at length to wither and fall. The wheat-fly, *cecidomyia tritice* lays its eggs in the young ear of wheat just as it blossoms, where the young maggot, as soon as it is hatched, feeds on the pollen and juices of the ovary of the blossom, thus destroying the reproductiveness of the floret in which it is lodged, so that the seed never forms and the young germ shrivels up and decays.

"The wheat-fly is very minute, scarcely exceeding the twelfth part of an inch in length, and resembling a small gnat or midge. The female is orange-coloured, her eyes are intensely black, meeting on the crown, and covering nearly the whole head.—The antennæ are pale brown, long as the body and

clothed with longish hairs, they consist of twelve joints, which, except two at the base, are oblong, oval, and narrowed somewhat in the middle. The abdomen is rather short and tapering to the apex, which is furnished with an ovipositor nearly thrice as long as the body. The wings are incumbent in repose, longer than the body, yellowish white, and beautifully iridescent, or rainbow like, and fringed with delicate hairs. The two halteres, or poisers, are large and capitate. The six legs are long, slender, and nearly of equal length. The thighs and shanks are equally long. The tarsi, or feet, five jointed. The claws are very minute. The male is more rarely seen, they are usually smaller than the females and somewhat paler in color. The antennae of the males are twice as long as the body and con-

close to her by an observer; and she slowly introduces her ovipositor, and slowly parts with her eggs, and then cautiously and deliberately withdraws the



Fig. 7.



Fig. 8.



Fig. 9.

7. Wheat Midge at rest, with its wings in their natural position—magnified. 8. Kernel of wheat, the chaff pulled down to show the maggots in their usual situation. 9. A mature maggot highly magnified.



Fig. 4.

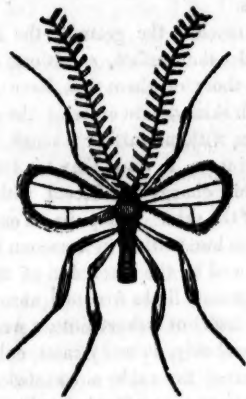


Fig. 5.



Fig. 6.

4. Part of a male antenna. 5. Magnified male of the Clear-winged Wheat Midge. 6. Foot of the Wheat Midge highly magnified.

sist of twenty-four joints, which, except the two basal ones, are globular. The ovipositor of the female is not seen, and would not by a stranger be supposed to exist in the ordinary condition of the fly; but is readily discovered by pressing the anus, or at the season of oviposition, or laying the eggs."

The wheat-midge makes its appearance in wheat fields just about the time when the ear is beginning to emerge from its leafy envelope, most commonly in the early part of June. It readily escapes the observation of persons ignorant of its character, or not looking out for it, but to an intelligent observer it may be seen on calm evenings swarming about in small undulating clouds, in the manner of gnats and other kindred species, and it is occasionally seen also in the mornings and during the day. Each female usually chooses as the receptacle of her eggs an ear just emerging from the sheath, and she introduces them by means of her ovipositor into the floret, and while doing so keeps her arms nearly at right angles with the margin of the floret's glume, or outer husk. She is so engrossed with her occupation that she is not easily disturbed, and may even go on with her operations though a magnifying glass should be held

instrument. So many as thirty-five flies may sometimes be seen at one time upon one ear. Mr. Kirby, after some vain attempts to see the eggs pass through the long retractile tube, eventually witnessed that curious phenomenon. "I gathered," said he, "an ear upon which some of the insects were busy, and held it so as to let a sunbeam fall upon one of them; examining its operations under the three glasses of a pocket microscope, I could then very distinctly perceive the eggs passing, one after another, like minute air-bubbles through the vagina, the aculeus being wholly inserted in the floret." The eggs in passing through the oviduct, receive a coating of glutinous matter, which causes them to adhere firmly to the glumes or outer husk of the floret; and they are deposited in small clusters varying in number from two to upwards of twenty, and they amount in the aggregate to so vast a multitude as might seem to threaten terrible desolation or even utter destruction to wheat crops. The eggs are oblong, transparent, and of a pale buff colour, and are hatched in the course of ten or fourteen days. The minute maggots which proceed from them have the same general form as other dipterous larvae, and are at first transparent and colorless, but soon begin to assume hues of straw color, yellow, saffron, and orange, according to their age. They then feed upon the young germ, perhaps eating the pollen or fructifying principle of the flower, thus preventing the impregnation of the grain, so that the seed never forms, and the parts of fructification lose all their virus and shrivel and decay. So many as forty-seven have been counted in one floret, and even the smallest number ever present seem to be perfectly competent to do the work of destruction. The flies are not confined to wheat alone, but deposit in barley, ry, and oats, when these plants are in flower at the time of their appearance. The maggots have been found within the seed scales of grass, growing near to wheat fields. Being hatched at various times during a period of four or five weeks, they do not all arrive at

maturity together. They do not exceed one-eighth of an inch in length, and many, even when fully grown, are much smaller. In warm and sheltered situations, and in parts of fields protected from the wind by fences, buildings, trees, or bushes, the insects are said to be much more numerous than in fields upon high ground or other exposed places, where the grain is kept in constant motion by the wind. Grain is commonly more infested by them during the *second* than the first year, *when grown upon the same ground in succession*, and it suffers more in the vicinity of old fields, than in places more remote. They prey on the wheat in the milky state, and cease their ravages when the grain becomes hard. They do not burrow in the kernels but live on the pollen, and soft matter of the grain, which they probably extract from the base of the germs. It appears from various statements, that very early and very late wheat escapes with comparatively little injury; the amount of which, in other cases, depends upon the condition of the grain at the time when the maggots are hatched. When the maggots begin their depredations soon after the blossoming of the grain, they do the greatest injury; for the kernels never fill out at all. When attacked in a more advanced state the grains present a shrivelled appearance. The hulls of the shrunk grain will always be found split open on the convex side, so as to expose the embryo.

Towards the end of July and the beginning of August, the full grown maggots leave off eating, and become sluggish and torpid, preparatory to moulting their skins, which takes place in the following manner. The body of the maggot gradually shrinks in length within its skin, and becomes more flattened and less pointed. The torpid state lasts only a few days, after which the insect casts off its skin, leaving the latter entire, except a little rent in one end of it. The cast skins are exceedingly thin and colorless, and, through a microscope are seen to be marked with eleven transverse lines. Numbers of the skins may be found in the wheat ears immediately after the moulting process is completed. Sometimes the maggots descend from the plants and moult on the surface of the ground, where they leave their cast skins. Late broods are sometimes harvested with the grain, and carried into the barn without having moulted.

After shedding its skin the maggot recovers its activity, writhing about, but taking no food. It is shorter, somewhat flattened, and more obtuse than before, and is of a deep yellow color, with an oblong greenish spot in the middle of the body. Within two or three days after moulting, the maggots either descend of their own accord, or are shaken out of the ears by the wind, and fall to the ground. They do not let themselves down by threads, for they are not able to spin. Nearly all of them disappear before

the middle of August, and they are rarely found in the grain at the time of harvest. In an account of the damage done by these insects in Vermont, in the summer of 1833, it is stated, that, after a shower of rain, they have been seen in such countless numbers on the beards of wheat, as to give the whole field the color of the insect. Mr. E. Wood, of Winthrop, Maine, makes the following remarks: "This day, 9th August, a warm rain is falling, and a neighbor of mine has brought me a head of wheat which has become loaded with worms. They are crawling out from the husk or chaff of the grain, and were on the beards, and he says he saw great numbers of them on the ground." From this it appears that the descent of the insects is facilitated by falling rain and heavy dews.

Having reached the ground, the maggots soon burrow under the surface, sometimes to the depth of an inch, those of them that have not moulted casting their skins before entering the earth. Here they remain, without further change, through the following winter. In June they are transformed to pupae. This change is effected without another moulting of the skin. The pupa is entirely naked, not being enclosed either in a cocoon or in the preparium formed by the outer skin of the larva, and has its wings and limbs free and unconfined. The pupa state lasts but a short time, a week or two at most, and probably, in many cases, only a few days. Under the most favorable circumstances, the pupa works its way to the surface before liberating the included fly; and when the insect has taken wing, its empty pupa skin will be seen sticking out of the ground. In other cases, the fly issues from its preparium in the earth, and comes to the surface with flabby wings, which soon expand and dry, on exposure to the air. This last change occurs mostly during the months of June and July, when great numbers of the flies have been seen apparently coming from the ground, in fields where grain was grown the year before.

The ravages of the wheat midge are not equally great in every place, and are very variable in their character. insignificant one season and excessive in another; but, in the aggregate of years, they are much greater than most farmers are aware of, or would readily believe. Mr. Kirby estimated the loss in a field of 15 acres which he particularly examined, at one-twentieth of the whole produce; or at an average of about two grains in each ear. Mr. Gorrie estimated the loss in the late sown crops in Perthshire, in 1828, at one-third of the whole produce, Mr. Bell, of Mid-Loch, writing in June, 1830, expresses apprehensions respecting the crops of Scotland, fully in accordance with Mr. Gorrie's estimate, and says: "Another year or two of the wheat-fly will make two-thirds of the farmers here bankrupts." Mr. Sydney says: "The author can assert that in

the autumn of 1845, he found great quantities of the larva, not only in a first rate wheat district in Norfolk, but in other parts of the country. Ear after ear was examined by him, and the contents shown to farmers who never before had even heard of such things, and who were perfectly astonished when they saw them. Often has he also entered a barn and taken up a handful of dust from the floor where wheat had been winnowed, turned out the little orange-colored devourers, now in their membranous cases, one after another, but scarcely ever met with any person who had previously noticed them. If they had been seen they took them for the seeds of some kind of weed.

This insect has been observed for several years in the northern and eastern parts of the United States and in Canada. It has been mistaken for the grain weevil, the Angoumois grain-moth, and the Hessian fly, and its history has been so confounded with that of another insect, also called the grain-worm, in some parts of the country, that it is difficult to ascertain the amount of injury done by either of them alone. This grain-worm has been already described in this essay, as the larva of a moth called *Noctua cubicularis* (order Lepidoptera), these larva are provided with legs, and suspend themselves by a thread of their own spinning; they remain depredating upon the ears of corn until after the time of harvest; and these characteristics will easily enable persons to distinguish them from the writhing maggot of the wheat midge, destitute of legs and unable to spin a thread. The larva of the *Noctua cubicularis* crawl about. The maggots of the wheat midge, move in a wriggling manner, and by sudden jerks of the body.

"The wheat-midge, or wheat-fly as it has sometimes been called, was first seen in America about the year 1828, in the northern part of Vermont, and on the borders of Lower Canada. From these places its ravages have gradually extended, in various directions from year to year. A considerable part of Upper Canada, of New York, New Hampshire, and of Massachusetts, have been visited by it, and in 1834, it appeared in Maine, which it has traversed, in an easterly course, at the rate of twenty or thirty miles a year. The country over which it has spread, has continued to suffer more or less from its alarming depredations, the loss by which has been found to vary from about one-tenth part to nearly the whole of the annual crop of wheat; nor has the insect entirely disappeared in any place, till it has been starved out by a change of agriculture, or by the substitution of the late sown spring wheat for other varieties of grain.

In the report upon the census of the Canadas for 1851, so carefully and correctly compiled by Wm. Hutton, Esq., we learn that, "the worst crops in Canada West in the year 1851, were in those counties where the weevil (wheat-midge) was most preva-

lent. It committed the most serious depredations, in very many cases having rendered whole fields of most promising wheat not worth the threshing.— This fly, which deposits its larva (eggs) in the blossom of the wheat in order to feed upon the milk of the grain as it ripens, was unfortunately in that year most abundant in the counties of Frontenac, Lennox, Addington, Hastings and Prince Edward, and is travelling gradually west at the rate of about 9 miles every summer, and remains from 5 to 7 years in a locality. The only prevention yet discovered has been to sow early seed on early land, and very early in the Autumn, so that the wheat may blossom before its enemy takes wing, the period for which depends much upon the earliness of the season. So destructive was the fly in 1851, that the fine agricultural county of Lennox produced only 6 bushels per acre, Hastings about 10, and Prince Edward, Addington and Frontenac about 11. It had not in that year reached the county of Northumberland, but was very destructive in that county in the following year, 1852."

In this extract we find the popular name "weevil" used in speaking of the wheat-fly or midge; from page 18 of this essay it will be observed that the true grain weevil is a coleopterous insect, a slender beetle with a long snout, which does not attack growing crops of wheat, but confines its depredations to stored grain. The account given of the wheat-fly in the Census Report is otherwise substantially correct and will be found to agree with that set forth in the pages of this essay.

The wheat-midge is generally believed in England, to have strong preferences and dislikes in reference to the commonly cultivated wheats, and has been supposed or observed to do prime injury to some, secondary injury to others, and little or no injury to others. One reason why some wheats are little affected by it may be, that they are generally sown at a time, which, conjointly with their habits, occasions their coming into ear at a period when the midge is not in a condition to attack them; and another reason why the same or other varieties enjoy comparative safety may be that they have too hard an envelop to be readily pierced by the midge's ovipositor. "The species of Woolly eared, Lammas seed, and Rivet wheat," says Mr. Sherreff, "have been stated in East Lothian, to resist the attack of the fly. The two first mentioned kinds come into ear about a week sooner, the last about a week later than those commonly cultivated, and to these peculiarities owe their occasional escape, earing either before or after the general depositing of eggs takes place. The fly, however, does not always appear in strict conformity with the growth of the wheat plant, and the earing of different species is late or early, compared with the general crop, according to the time at which they are sown. The eggs of the

wheat fly are generally deposited when the ear is escaping from the sheath,—and when delayed beyond this period, the grains either become diminutive, or the maggots perish; and, therefore, a species of wheat in some measure impervious to the ovipositor of the fly at this stage of the plant's growth must tend to mitigate the ravages of the fly. There is such a species cultivated in many countries, the name of which is the Polish wheat, *Triticum polonicum*. It is characterized by a large exterior chaff, which closely envelops the cups when the ear is escaping from the sheath, and at this time defends the flower in a great measure from the fly's ovipositor. I have grown the polonicum on a small scale amongst other kinds; and although it did not altogether escape the attack of the fly, it was much less injured than any of those which came into ear at the same time."

As the Polish wheat is very far from being eminent in other good agricultural qualities, the farmer must look for some other kind superior in quality yet possessing an equally thick chaff. Mr. Gorrie in the course of comparative experiments during the prevalence of the wheat-midge in 1829, found a wheat belonging to the species *Triticum tingidum*, nearly akin to the Rivet wheats, possessing a tall, vigorous stem, yielding a very large produce, though inferior in quality to those of the common winter wheat, to be completely proof against the midge.—"I had a fall of it," says he, "growing in the centre of a field of common wheat, which came into ear on the 22nd of June, exactly at the same time with the common variety. At that period I visited the field every evening for a week, and although the flies were numerous and busily employed on every ear of the common wheat (the half of which they destroyed), I, and my friends who went frequently with me, could only detect one solitary fly at work on the new variety; and although the ear was marked, no maggots could therein be afterwards discovered." The field of 15 acres examined by Mr. Kirby was planted partly with common white wheat, and partly with common red; and the result of this examination was, that the white wheat was destroyed at the rate of not quite 2½ grains per ear, while the red was injured at the rate of not quite 1½ grains per ear.

But all these experiments, it is feared, are more or less deceptive; and the different results may have been owing to the accidental circumstance of one crop being more exactly in the stage of fitness for the insect's use than another, or to the influence of the gregarious habits of the midge, whose swarms usually assemble and remain in the neighborhood of the spot where they first make a settlement; and the farmer had better, perhaps, aim at bringing the common varieties of wheat into early development before the time of oviposition of the fly, or delaying

the season of blossoming until after the fly has laid its eggs, rather than trust to the reputed anti-fly properties of any variety.

Kirby recommended remedies or preventives directed immediately against the life or operations of the perfect fly as most likely to prove successful.—"By a set of experiments first made upon a small scale," says he, "the intelligent farmer may possibly find out some method that will prevent this insect from laying its eggs in the wheat. These should commence as soon as the ear begins to quit the *folium vaginans* or hose; and they ought to be continued until the germen is impregnated, or to use the rural phrase, the wheat is off the blossom. Perhaps fumigations of tobacco or sulphur, if made when the wind is favorable, might render the ear disagreeable to this insect." But either fumigation of any such kind or medical aspersions, or any other applications which might be suggested, in order to be made on a sufficiently extensive scale to produce decided effect, would probably cost as much trouble and expense as the crop would be worth.

Remedies against the matured larvae or pupae have been recommended by some. "It is possible," says Mr. Duncan, "that Mr. Gorrie's plan of ploughing the wheat stubbles, and having what is called a skim coulter attached, of such a construction as would cut and lay about an inch of the surface at the bottom of the furrow, would bury many of the pupae at such a depth as to render their resurrection improbable." This method, however, could not be adopted where the field was laid down with grass and clover seeds; which would also be a reason for not adopting the next remedy proposed, viz:

Burning the stubble after the crop has been taken off. This, perhaps, as in the case of the joint-worm and Hessian fly will be found the most effectual method of lessening the numbers of the wheat-midge. When the stubble is short and scanty, the conflagration may be assisted by straw, or other inflammable matters, if it is rank the fire will be sufficient to heat the whole surface of the ground, and in all probability will destroy the greater part if not the whole of the pupae, heat being speedily fatal to them. The farmer can take the precaution of laying down his clover and grass seeds with barley or some other spring crop, and even where clover has been laid down with wheat it would be better to sacrifice it, if, at the same time, the destructive flies can be got rid of.

As a large proportion of the larvae which live to become pupae remain attached to the harvested grain till separated from it by the process of threshing, when they pass away with the chaff dust, and are apt to return directly or indirectly to the ground, care must be taken to prevent such a contingency, by carefully separating the chaff dust and burning

it. A method of doing this has been suggested by Professor Henslow which is both simple and efficient. He says, "It occurred to me, that if a wire gauze sieve were placed before the winnowing machine in a sloping position, so as to allow the chaff to fall upon it, and then roll from it, the pupae would pass through, and might be caught with the dust in a tray placed below the sieve. The plan was tried and found to answer satisfactorily; and doubtless might be made the means, were it generally adopted, of collecting and destroying myriads on myriads of the pupae of this destructive fly.

"Several cases of the efficacy of fumigation in preventing the depredations of these insects, are recorded in the agricultural papers of the United States. For this purpose brimstone has been used in the proportion of one pound to every bushel of seed sown. Strips of woollen cloth dipped in melted brimstone, and fastened to sticks in various parts of the field, and particularly on the windward side, are set on fire, for several evenings in succession, at the time when the plant is in blossom; the smoke and fumes thus penetrate the standing grain and prove very offensive or destructive to the flies, which are laying their eggs. A thick smoke from heaps of burning weeds, sprinkled with brimstone, around the sides of the field, has also been recommended. The Rev. Henry Colman, Commissioner for the Agricultural Survey of Massachusetts, says that lime or ashes strewn over the grain when in blossom, is a preventive which may be relied on with confidence. For every acre of grain, from one peck to a bushel of newly slacked lime, or of good wood ashes will be required, and this should be scattered over the plants when they are wet with dew or rain. Two or three applications of it have sometimes been found necessary."

Harris says, that, in those parts of New England where these insects have done great injury, the cultivation of Fall wheat has been given up; and this course he believes to be the safest for some years to come. Spring wheat sown after the 15th or 20th of May, generally escapes the ravages of these destructive insects; but the time of sowing varies with the latitude and elevation of the place, and the forwardness of the season. Late sowing has almost entirely banished the wheat-flies from those parts of Vermont where they first appeared. Fall wheat, if grown, should be sown very early, so that the grain may have become hard before the flies make their appearance.

The wheat-midge is kept powerfully in check by some natural enemies sent in mercy by Heaven as minute benefactors of our race. Particularly three species of ichneumons. One of these *Enerytus inserens* is black and shining, and about half the length of the wheat-midge; another, *Eurytoma penetrans*, is black with a brassy lustre, the abdomen glossed

with blue, compressed and truncated behind; and the third, and most important, *Platygaster tipula*, is a minute black-midge fly, with the legs and base of the antennae red—the male quite black and rarely seen—the female of a pitchy color, with a sharp ovipositorial point at her tail, exceedingly abundant and active in all infested fields in the months of July and August. Superficial observers have mistaken the ichneumon for the parent of the larvae of the wheat-midge, and have condemned it as the origin of the very evils it is destined to diminish. This little platygaster may be readily found on the glumes or chaffy covers of the wheat ears in the months of July and August. It runs rapidly over the ears and seems to know well those which are occupied by the larvae of the midge. The female ichneumon deposits one egg, and only one, in each of the larvae of the wheat-midge. When these eggs are hatched, the young maggots which they produce, and which are the caterpillars of the ichneumons, feed upon the fleshy or muscular parts of the caterpillar they are attacking, carefully avoiding the vital parts. At length the caterpillar they have been thus devouring, dies, or, as frequently happens, it changes to the state of chrysalis before it is destroyed. The ichneumon caterpillars also pass to the chrysalis state, and either remain within the body of the dead caterpillar, or come out before they assume the fly state. Each species of ichneumon is restricted in its attacks to one, or at most to a few, species of caterpillar; and the females instinctively proportion the number of eggs they deposit in each individual to the relative size of their own offspring and that of the insect on which they are destined to prey.

On Rearing Calves.

MR. JOHNSTONE—Sir:—I have become satisfied that calves do not thrive as well that are allowed their full liberty, with leave to drink when they please, as those do that are confined, and only drink at regular intervals, and fill themselves with something else than water. During last Spring, I had five calves which were nearly of an age and size, and all about the same condition. Two of these I confined in a yard, and fed them regularly about four times during each day. These two were the poorest of the five. The other three I turned into a small, rich pasture, where there was water, which they could get at whenever they pleased. The two calves that were confined, at the end of six weeks were much the largest, were in the best condition, and if I had taken the lot in market, they would have brought at least two or three dollars per head the most. I have heard a great many argue that calves should get at water whenever they want it, and some persons seem to think it bad policy to deprive the young animal of its liberty at so tender an age. I think

they should not, and that being permitted to get to water when hungry is a reason why they become stunted and pot bellied. A young animal naturally takes a great deal of exercise, and its stomach not containing a great deal of food, it is soon exhausted. If the calf were permitted to run with its dam, it would have recourse to her, and fill itself with milk, a substance that serves for both meat and drink.—Calves, however, that are fed, and not permitted to run with their dams, as soon as they feel themselves hungry, or empty, immediately run to the water trough, out of which they fill their stomach, and it satisfies them for the moment, but, at the same time, weakens its power, and is passed through their intestines, irritating them, and finally the scours or a diarrhoea is brought on that stops for a season the growth of the animal, and I think has a tendency to stunt its growth. At any rate a very important period in the life of the young animal is passed without yielding any profit to the owner. I have come to the conclusion that I will confine all my calves, feeding them liberally from four to five times a day, and not permit them to have access to water until they are old enough to digest properly solid food.

Yours truly,

S. LYNDON.

Canton, August 1858.

There are a great number of errors prevalent in relation to the feeding of young stock, and the observations of our friend Lyndon are worthy of attention, as being in accordance with correct principles. Many persons fondly imagine that because milk is a fluid, and is the natural food of calves, that as water is also a fluid, it must serve as a food as well as milk. But there are two or three functions which milk enables the young animal to perform, which water cannot do. We will endeavor to point them out in a plain manner, so that our readers may practice on what we preach with some profit to themselves. In the first place, a young animal has not only to generate more heat than an adult, but it has to increase in size. Neither of these functions can it perform without material. It must have fuel to generate the heat it keeps up, and it must have the solid material with which to form the bone and muscle, which gives it size and value. In milk it has these materials—in water it has none of them, for water is only the conveyance which floats the actual food within reach of the absorbents. The milk of the cow contains in every 100 parts, 87 of water, but there is 13 parts of solid material remaining, which is divided up so as to make an excellent food for the young animal. The composition of this solid material is as follows: Casein or cheese, 4.0, butter 4.6, sugar of milk 3.8, ashes or bone earth 0.6. Now casein has the very same composition as animal flesh or muscle, and of course is assimilated or made into flesh. Butter and sugar both go to promote respiration by furnishing the fuel

which keeps up the heat of the body, and which heat keeps the animal engine in full blast, performing its work. The ashes of the milk contain both salt and bone earth, and are needed not only to promote digestion, but also to give the requisite increase to the size of the frame. An adult ox or cow has a very complex system of stomachs, which nature has provided, that it may thus prepare the herbage on which it is fed, to be manufactured into flesh and bone. But the calf has not this system of stomachs fully developed. In the cow, the food swallowed has to pass through three stomachs before it reaches the true digesting stomach. In the calf the apertures of two of these stomachs are closed, and the liquid food of the young animal passes through the third as though it were a portion of the gullet, and goes directly into the fourth, or true digesting stomach. The organs of digestion of the young animal not being matured, it ought not, therefore, to have food thrust upon it that it cannot digest. It should not be permitted to distend its stomach with copious draughts of water, which tend to excite its digestive organs, without satisfying their wants, and thus weakens their powers, at a time when the animal has the utmost need that they should be strong. Again, the young animal, where it does not have milk, should have food put before it that resembles milk in its composition as much as possible. Many people take great pride in showing what fine skim-milk calves they have raised. But on enquiry, it is generally found that they have put into the milk some substance that, at least in part, supplies the loss of the butter or fatty matter, which has been taken away, or else there has been left in the skimmed milk a good proportion of the cream. Scalded ham or meat is a great help in such cases. Linseed cake meal, with molasses, is sometimes mixed with skimmed milk, and is found to answer the purpose of supplying the place of the butter. For without heat the animal cannot carry on the work of assimilation of the casein, and therefore it cannot grow.—Again, it is the anxiety to save the milk which causes some breeders to wean off their calves before they are prepared. Hence a check is given to their growth at a time when they never get over it. We have mentioned above that three of the stomachs of the young calf do not act until after it is considerably grown; in fact they come gradually into use as the animal learns to feed. This change does not take place fully till the calf is two months old or more, and then it should have a large portion of milk, and but little access to water, if it is to be kept growing. Many persons just stint their calves at this age, and by the time they recover from this check, they are turned out into the yard to pass the winter with but very little except the most unwholesome food to live upon, and from this cause a diminutive size and weak constitution is insured ever

after. The first summer and the first winter is the most important time for calves. If their growth and health are promoted by healthy food that they can use during the summer, they may put up with a little hardship through the winter, and come out in the spring ready to go ahead. But if they are checked in the summer, and have rather rough usage during the winter, the second year's growth is lost, for it will take half the season to bring their system into a condition fit to make the most of the food which is set before them. Hence it is that we hear of calves making remarkably fast growths on being turned out to grass the second year. The reason is that they had been well fed as calves, and had not been injured by injudicious or hasty weaning.— Their growth had not been checked, nor their digestive system injured at a tender age. That was the whole secret of their power to make 100 pounds of flesh weight in a month!

Soils on the Agricultural College Farm and their composition.

MR. EDITOR:—The following is the composition of a portion of the soil of the College Farm—100 parts of the soil gave the amounts expressed by the figures below:

Inorganic Constituents Soluble in Water.

Sulphuric acid.....	0.0009
Phosphoric acid.....	trace
Carbonic acid.....	trace
Chlorine.....	0.0119
Oxide iron, alumina, oxide manganese.....	0.0017
Lime.....	0.0332
Magnesia.....	0.0028
Potash.....	0.0316
Soda.....	0.0278

Total..... 0.1089

Soluble in Dilute Hydrochloric Acid.

Sulphuric acid.....	0.0061
Phosphoric acid.....	0.1220
Protoxide of iron.....	1.1157
Peroxide of iron.....	0.5890
Alumina.....	0.8062
Manganese—oxide.....	0.0241
Lime.....	0.1687
Magnesia.....	0.1412
Potash.....	0.0455
Soda.....	0.758

Total..... 3.0879

Insoluble in Water and Dilute Hydrochloric Acid

Silicic acid.....	80.0440
Oxide of iron.....	0.0758
Oxide of manganese.....	0.0163
Alumina.....	2.4938
Lime.....	1.0453
Magnesia.....	0.1770

Total..... 98.8522

Organic Constituents.

Humic acids.....	0.2489
Humus coal.....	0.4374
Other organic matters.....	2.0491

Total..... 2.7254

Loss..... 0.2256

100,0000

Of the organic constituents 0.1172 per cent. was soluble in water.

There is nothing very peculiar in the composition of the soil. It is quite sandy, and represents very nearly the composition of much of the soil of Michigan. The growth of timber is mostly white oak.

An analysis of a portion of the soil collected from another field of the College Farm, made by Mr. Bancker, who has acted as my assistant, gave the following composition:

Sulphuric acid.....	0.0481
Phosphoric acid.....	0.0983
Carbonic acid.....	trace
Chlorine.....	0.0189
Oxides of Iron.....	0.9756
Oxide of manganese.....	0.0701
Alumina.....	2.7183
Lime.....	0.5734
Magnesia.....	0.5087
Potash.....	0.1727
Soda.....	0.1354
Silicic acid.....	90.5028
Humic acids.....	1.2736
Humus coal.....	0.8674
Other organic matters.....	0.9753
Loss.....	0.5664

Total..... 100,0000

These two specimens are very nearly of the same composition. The latter is a virgin soil; the former has been under cultivation for years. They represent the quality of the soil of more than 100 acres of the farm.

It will readily be perceived that without manuring, it would not be very productive for most crops.

Only about one-tenth of one per cent. of the earthy matter is soluble in water. Water, therefore, can furnish to the plant but 1 lb. of soluble matter in every 1000 lbs. of soil. There is too little potash and soda to raise good root crops, unless frequently manured. It is almost destitute of sulphuric acid, and the amount of lime soluble in water is small; therefore, a dressing of gypsum could not fail to be of advantage to grass, and also some other crops.

The potash, soda, magnesia, manganese, and a part of the lime, alumina, and oxides of iron, which are given as soluble in hydrochloric acid, were doubtless combined in the soil with silica, and would be gradually liberated for the plant, principally by the agency of carbonic acid. In this state of combination they furnish a very reluctant supply of food for the growing crop; but at the same time they render the silica of the soil more available. Of course the alumina, lime, magnesia, &c., represented as insoluble in dilute hydrochloric acid, were wholly combined with silica; therefore, taking the large amount of silica present in the soil, the fact that so much potash, soda, lime, &c., is united with it, will always secure an abundance of the silica in a soluble form.

The soil is rather deficient in organic matter—and, therefore, the application of caustic manures, such as quicklime, should be avoided. Green manuring would be very beneficial to such soils chemi-

cally; and there would not be the danger of injuring it physically, which is incurred whenever dry vegetable matter is mixed through a sandy soil.

To discuss the many points of interest which are naturally suggested by such an analysis, cannot be done in a communication like this. I must reserve for the future the remarks I wish to make on the subject of manures.

In closing, I will only add that from necessity the farming operations at the College have been mostly confined to this class of soils. It could not be expected, then, that they would afford very favorable results. The land is soon exhausted, unless frequently manured; and it is rather expensive to remake a soil as soon as you begin its cultivation.—It furnishes a good opportunity for experiments, however, particularly as regards the chemical relations of plants. Such a system of experiments we hope to institute, as soon as the soil becomes sufficiently subdued.

Yours truly,

L. R. FISK.

AGRICULTURAL COLLEGE, July, 1858.

The Sorghum in England.

My Sorghum has been growing rapidly since the 10th: it now measures 3 feet 8 inches to the tip of its central leaf, and some that is growing on a piece of land that was dug with Parkes' forks 2 feet deep measures 6 feet to the tip of its longest leaf; its growth is indeed marvellous. I can now plainly see what I have hitherto merely believed, that it is likely to make a revolution in stock feeding in France and Germany, and lead to an increase in stock beyond calculation, for as is well known green food after the beginning of July is rarely to be seen on the continent, and never in the south of France, where every quasi-green herb and tree is brown and desolate owing to the intense heat. This tropical heat seems however to be most highly favorable to the growth of Sorghum, which grows slowly in a temperature of 60° and most rapidly in 80° and 90° of heat. Soils that are light and dry seem very favorable to its welfare, although it is growing with me in clay and doing well. Bagshot Heath and parts of the New Forest with the assistance of guano would grow Sorghum enough to feed all the live stock in England for three months. Its culture has spread over the whole of the United States from Maine to the Gulf of Mexico in the Northern States; molasses are made from it in the southern region, in addition to using it for fodder. The Americans have been more prompt in its cultivation than our farmers; it was sent to the American Government from France, and at once widely distributed. I saw it last year growing vigorously in the light sandy soils between Magdeburg and Berlin, and took it for Indian Corn, feeling much surprise that it should succeed so far north. I have to add that my horses are racked up with it every night, having only the usual reduced quantity of corn as when eating Tares or Clover. My neighbor's cows eat it greedily, and he is inclined to think it will increase the quantity of milk from its succulence. Pigs eat it and enjoy it. It is indeed quite agreeable to hear them crunch its stalks, thick as one's finger, with so much gusto. Sheep I have not yet tried, but there is no doubt

about their liking it. In conclusion, I hope to see this most useful plant widely cultivated, for it will, I feel assured, be of great value to our stock feeders for autumn fodder. I have no interest in it but that of a well-wisher to one's friends and neighbors, as I am not a seedsman. It is not likely to be expensive to cultivate; 2 lbs. of seed, or even less, will sow an acre. Last year's seed was sold in Germany at about 1s. 6d. per lb.; it will not be dearer next spring. Deep stirring of the soil seems to suit it well, forking I like better than ploughing, but subsoil or double ploughing so as to give 1 foot of tilth would probably do well for it.—*Lond. Gazette.*

Physiology.

It will be remembered that about a year and a half ago, we announced with some satisfaction that Dr. HENRY GOADBY had received the appointment of Professor of Physiology and Entomology at the State Agricultural College. In reviewing the duties which would necessarily devolve upon him as an instructor, he found that a text book for the use of the pupils who would be put in his charge in the department of Physiology, would be needed, and that no work yet published was adequate for the instruction of youth. In the interval which the organization and initiatory terms of the new establishment left to him before being called upon to occupy his chair as one of the professors of the college, he determined to write a "Text Book on Physiology," and this work he proceeded to execute with an energy and ability which has certainly done great honor to the State and the Institution with which he is connected, and reflects, also, much credit on the wise discrimination, that, in spite of somewhat vexatious but futile opposition, secured to the State a man of real talent and learning, fully competent to perform the duties assigned him.

"*A Text Book of Vegetable and Animal Physiology, designed for the use of Schools, Seminaries, and Colleges in the United States,*" is the title of this work. It is published by the Messrs. Appleton, in the most beautiful style of typography, and makes one of the handsomest volumes ever issued from the American press.

To the Agriculturist, a knowledge of Physiology, as illustrated and taught in this volume, is of the highest importance. It is really of far more daily utility than a knowledge of chemistry. The agriculturist is at all times dealing with things that are governed by certain physiological laws. There is not an animal in his barnyard, nor a plant that he grows which is not amenable to them. When plants and animals are dead and need not his care, then chemical laws govern; but whilst they live and grow, the science of the physiologist must be resorted to if we would become acquainted with how their growth is made, and under what circumstances it may be promoted or checked. The chemist analyses, disintegrates, weighs the component parts of all bodies organic or inorganic. Every thing to him

is "stock or stone." Not so with the physiologist—to him the increase, change, and decrease of every living thing, whether the simplest plant, and the humblest worm, or the wondrous and complex form of man himself, is the study; thence it will be seen how necessary a knowledge of physiology must be to the agricultural student, and how incomplete a course of instruction would be without it; and it will also be understood how very necessary to such students it is that such an important science should be taught by a competent instructor, and not by a quack.

A glance at this text book, both in its contents and their arrangement, shows the hand of the master. Commencing with the simplest structure of plants, he conducts the students, step by step, and lesson by lesson, through the whole range of tissues and their organization and uses, their modes of reproduction, of increase and of change, which exist in the most important vegetable productions.

The beautiful engravings with which the work is illustrated are by Henry E. Downer, a young Michigan artist whose work often illustrates our own pages.

We quote here what is said about starch, speaking of the cells of plants being formed to contain various contents; the author says:

At the head of this list, however, *secula*, or *starch*, in relation to human necessities, is most conspicuous; almost *two-thirds* of the human family being nourished *exclusively upon Starch*,

This very valuable product constitutes an important element of all the cereal (edible, as wheat, etc.) grains; it forms the nutritive principle of the leguminous plants (*Peas, Beans*), and is more or less actively distributed throughout the vegetable kingdom. It occurs in every plant, and it is found in every part; it will only pay the cost of separation, however, when found in the *root, tubers, seeds, fruits*, and (more easily, as in the Sago Palm) the *pith*.

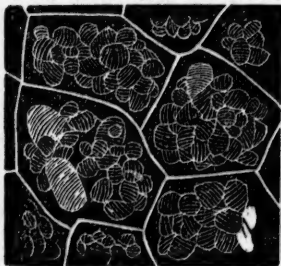


Fig. 16.

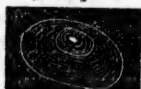


Fig. 17.



Fig. 18.

The Potato (Fig. 16) is found to consist of cells of variable size, formed of cellulose, and filled with corpuscles of *starch*; these, too, vary remarkably, some being very large, others minute, and the remainder of intermediate size, so that every cell may be quite full.

Examined by the Microscope, a corpuscle of starch (Fig. 17) is a very interesting and beautiful object; each corpuscle possesses somewhere, but its situation is uncertain, a circular spot called the *hilum*; this is (erroneously) supposed to be its point of attachment to the cell-wall. Around the hilum, a number of extremely delicate, transparent, concentric rings are seen.

There are no two forms or species of starch *precisely alike*, and the points of difference, although frequently minute, become characteristic; thus it will be seen that the starch of Indian corn (Fig. 19) differs materially from the forms yet presented.

The starch of *Wheat* (Fig. 20) offers another variety; here the corpuscle is nearly round, the hilum always in the centre, and only one ring surrounding it.

We have examined the largest form of starch (*Tous les mois*); we will now consider the smallest,



Fig. 19.



Fig. 20.

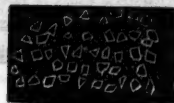


Fig. 21.

Rice. The starch of this plant (Fig. 21) is remarkable no less for the great irregularity of its form than for its minuteness. The question has yet to be determined whether or not starch be more or less nutritive in proportion to its size; should it eventually be settled in the affirmative, *Tous les mois* will undoubtedly take the first rank in the category, and *Rice* the last, the Potato, and the contents of the leguminosae (peas, beans), together with the Cereal grains, will then hold an intermediate place. The *Tous les mois* is such a valuable form of starch, that it is much to be regretted its cultivation has not been attempted in this country.

Now that we have a "Model Farm" in our midst, it is to be hoped the attempt to raise it will be speedily made, and the results made known, for the good of the community. There appears to be no sufficient reason why the experiment should not be eminently successful.

Starch is laid up by the plants forming it, as a store of nourishment upon which they can draw for their subsistence in a season of need; hence, the quantity yielded differs in the same plant at different periods of its growth. Thus, starch abounds in the potato towards the latter part of the season, but it decreases in Spring, because of the germination of the tubers, which at such a time require to appropriate it.

We quote also from the work what he says on the subject of flint, and its mode of entering into the structure of plants:

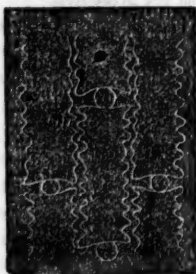
The grasses, which include all the Cereal grains, Canes, Horse-tails, &c., are conspicuous for the large amount of silica which enters into their composition. Who has not marvelled at the singularly erect position of a stalk of wheat, or rye, or barley, each supporting a heavy ear of grain at its summit?

And yet how few persons have enquired how it is, and why, that a slender stalk can grow so tall, and maintain, even against adverse elements, its perpendicular, erect form.

If a piece of straw of wheat, or any other cereal, be boiled in strong nitric acid, well washed in clean water, and examined by the Microscope, the secret will be developed; it will then be seen that it is defended from the root to the summit with a coat of pure, beautifully transparent silica, composed of millions of minute particles, all nicely jointed or fitted to each other.

Upon this principle all the grasses are defended

by a *skeleton* (as it were) composed of flint. The silica of the husk (chaff) of the rye, is shown at Fig. 65; it consists of a number of long bars (*b*), connect-



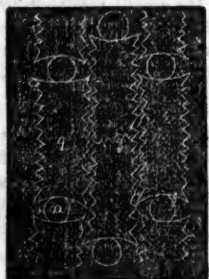
Silica of Rye.



Silica of the Oat.

ed with smaller oval bodies (*a*)—these are the casts in flint of the stomata, or breathing mouths.

The silicious particles of the Oat (Fig. 67) resem-



Silica of Rye.

ble those of the Rye, except that they are smaller in size; in the Wheat (Fig. 68) they are not smaller; the same *elements* will be found in all these illustrations, that is to say, the lengthened bar and the connecting rounded piece—a cast in Flint of the breathing mouth. Moreover, the *bars* have all serrated (toothed, like a saw) edges, by means of which they lock into each other to form a continuous tissue, just as the bones of the human skull interlock at the sutures.

The flint obtained from the husk of the Rice, differs somewhat from the preceding illustrations (Fig. 69). Here we find that the bars are shorter and broader, the serratures finer and more uniform in size; the stomata are apparent as nucleated spots in a tortuous line, which occupies the central portion of each bar.

Having gone through vegetable Physiology, the author then conducts the student into the arcana of animal life, commencing with the embryo, and leading us on from tissue and membrane, to the most elaborate mechanism of the human eye, never for a moment losing sight of the true design of the work. Probably no part of the work is more worthy of study than the chapters on nutrition. Tracing up through every order of animal life until he reaches man, he develops the system as one which is governed by the same laws, whether the process is carried on in the sac of a Polyps, or in the stomach of man. So with the nervous and vascular systems. The whole is connected together in such a chain that not a link can be spared.

The Ohio State Fair.

In company with a party of Michigan men, all more or less interested in agricultural affairs, we paid a visit to Sandusky during the great State Fair of Ohio. We started from this city at half past one o'clock in the afternoon, by the cars of the Detroit and Toledo Railroad, and reached Sandusky at half past seven in the evening. The regular connecting train had passed before we arrived, but the agent got up a special train and sent us all forward, with but fifteen minutes delay. In the company which went from this State, there was the Hon. C. Dickey, President of the State Agricultural Society, E. N. Wilcox, of Detroit, F. E. Eldred, Esq., John Sly, of Plymouth, Dr. C. A. Jeffries, Henry Warner and E. Arnold of Dexter, Mr. Phelps of Ann Arbor. At Sandusky we met Mr. Ballard, and Mr. John Uhl of Ypsilanti, John Daines, of Birmingham, who had his tile machine on hand and took the first premium with it, and Augustus Day of Detroit, who had his shingle machine in full blast; also J. P. Gillett, of Sharon, who had some of his Saxon sheep present. West's Hotel was, very fortunately, so near being completed, that it could be occupied with comfort, and afforded accommodation to an immense crowd. The fair grounds were located about a mile from the centre of the city, and occupied about thirty-six acres of ground, pretty level, and interspersed with some clumps of trees, under which many parties seemed to enjoy their picnics very comfortably. The buildings were considerably scattered over the grounds, but were very ample, and well designed for the purposes to which they were appropriated.

The stabling for the horses, the stalls for the cattle, the pens for the sheep and swine were on the most extensive scale, large, roomy and secure, and extended entirely around the grounds. We are informed that the whole amount of lumber required for this fair was 600,000 feet, and that the fitting up cost \$10,000. There was nothing done by halves. The whole arrangements were very complete.

The first point to which our attention was given, on entering the grounds, was the cattle. The show of short-horns, of good quality, was much superior to anything of the kind that has ever been seen in Michigan, and we are inclined to think that the difference was owing more to the fine quality of the females, than to the extraordinary superiority of the males. Still, in numbers they of course excel. Some of the best breeders did not have any of their cattle present. For instance, the Messrs. Renwick and Mr. Corwin were not represented, as well as some others, whose names are familiar to Michigan stock breeders. Amongst the bulls which attracted most attention, the celebrated New Year's Day was first; he is not a bull of the largest size, but for symmetry and proportion he is unrivalled. It is true that

awards were made to other animals, but no bull on the ground could compete with him for that completeness, elegance and finish, which are the ultimatum of good breeding. There was no point lacking, and the only fault he had was a darkish tinge in his muzzle. His handling qualities were very good, not of the highest order. We do not like him as a breeder, however, so well as the bull of R. A. Alexander, named Sirius, which took the first prize at the last National exhibition. Sirius excelled New Year's Day in length of body, without losing in justness of proportion, and was rather the fullest animal in the hind quarters. He was hardly so elegant in the head and horn; but was fully as fine, and had a much brighter muzzle. We have seldom seen a finer sight, than when the herds of the several proprietors competed, and four cows and a bull of each of some ten breeders were led into the ring to be examined. The premium was awarded to Mr. Pierce, the breeder of Sirloin, but there were two or three other herds which certainly stood an even chance; and the four cows and bull Starlight, shown by the Messrs. Fullington, ought not to be passed without a notice. The herd also, at the head of which stood the bull Czar, was remarkable for the excellence of the cows. The three year old bull Knickerbocker, to which was given the first prize in his class, was a bull of the very best proportions, standing rather high on his legs, but his limbs were clean and fine, his back beautiful, his head remarkably well set, but not so just in proportion as that of New Year's Day, neither was his neck so light and well made. His competitor, imported Nelson Gwynne, was a white, low set animal, with a great deal of substance, well proportioned, and magnificent buttocks and hind quarters, with shoulders well filled up—a good animal to breed upon, and first rate for crossing.

A son of New Year's Day, from the imported cow Roman 13th, in the sweepstake premium for all ages and breeds, took the first premium over all his competitors, including his own sire. The name of this young bull is Champion, and he is the one which Mr. H. Sly had in view when he went to Ohio. He is a dark roan in color, approaching to such an intensity on the head and neck that it is almost black, and this darkness extends to his nose, which is not clear from blemish. In handling quality he was very superior, long in carcass, deep in flank, full in the shoulder and chest, with hind quarters lengthy and very perfect, and a back and loin as level as a pine plank.

The shorthorn cows and heifers were superior as a class. Many of them were imported, and their progeny on the ground showed the effect of their breeding. Such heifers as Delight, out of Czar, and Sunbeam out of Colonel, as well as Young Crusader, which was out of Mottie, a cow shown by Jacob Pierce, were specimens of breeding which we have

yet to equal in this State. The difference arises solely, as we think, from the inferiority of our female stock, and the little attention that has been paid to them.

The class of Devons were fully represented, but we think we can show some better bulls and cows in this State than any that were shown at Sandusky.

The Herefords showed stronger than we expected to find them. Mr. Aston's herd presented some very grand animals. The cows particularly exhibited a thriftiness and size, as well as quality, which astonished those who were acquainted with the quality of this breed. There were two bulls, one particularly worthy of notice, named the Prince of Wales, shown by John Humphries of Elyria, which, for proportions, size, quality and beauty, compared favorably with any bull of any breed shown on the ground. Low on the legs, great length and weight of body, perfect mellowness in the handling, small extremities were his prominent characteristics. We tried hard to have Mr. Humphries bring his stock up to the Michigan State Fair, as such cattle would give ourselves a good idea of what these cattle are. Mr. Humphries half conditionally promised to come, and he may be here. We believe Mr. Aston will be up.

In sheep, the Cotswolds numbered strong, and Mr. Louis Brooks, of Northville, and his brother, A. S. Brooks, whom we met at Sandusky, purchased and brought up a magnificent yearling of this breed, which they will use for crossing. The South Downs shown were very good, but not remarkable for their superiority. There were also some good Leicesters shown. In the fine woolled races, there was a good deal of competition. Mr. J. P. Gillet, of Sharon, was present with a few of his famous Saxons, on which he was awarded a prize. We had quite a discussion with some of the Silesian breeders on the merit of their flocks, and we brought away a number of samples of wool from the prize animals, which are to be compared and examined in a short time. Amongst these, we were favored, under circumstances of great difficulty, with a sample of the fleece of Old Seventy, one of the best imported bucks that ever was sent to this country.

The show of swine was almost worthy of the great pork State of the Union, but the varieties were mainly confined to the Berkshires as representatives of the large breeds, and the Suffolk's in the small breeds. The Suffolk's, however, were remarkably good, and showed great improvement in size and length of body. Mr. F. E. Eldred purchased and brought up a very large boar, sired by imported Ajax, a boar of extraordinary merit lately brought from England. The sow is from stock imported by L. G. Morris, of Mt. Fordham, N. Y., and is of good size. Both will help very materially to enhance the value of this stock in our State, and, we presume,

will be present at the State Fair, and we hope, be seen by the thousands who visit it.

Of the horses of general use, such as single driving or saddle horses, we saw few choice animals, and but one pair of first rate matched horses. Carriage horses of a high type, such as were to be seen in Kentucky, were not seen at all. By carriage horses, we mean horses from sixteen to sixteen and a half hands in height, well matched in form, color, speed and style, with action, breeding, and that lofty carriage and general beauty of form that renders the pair of the highest value when put in market. There was quite a number of very fine trotting horses on the grounds, but nothing to show that breeding was attempted systematically. Most of those shown were more chance horses, and not the results of breeding with a design to obtain a particular end. The Messrs. Fullington showed a large English draft horse, a dappled grey, of fine proportions, and good action, with great bone and a full muscular system. Against this was shown a very good grey draft horse, of Canadian stock, much lighter, and fat, smooth and glossy, of very good proportions, but, as a draft horse, in no way comparable to Defiance, the English horse; also in competition were shown a number of other horses of no particular merit, except that they were heavy limbed, large horses, entirely unfit to be put in comparison with the former as breeders. We were somewhat amused to note how long it took the committee to make up their minds as to which horse should have the blue ribbon. If the word "draft horse" means anything, it means an animal that has power to pull great weights, and a stallion of that kind should be of the form most perfect for that purpose. We are certain that Defiance could have easily pulled off their feet any two of the horses in competition against him, and as for form as a stock getter, it was like comparing Gulliver to a Lilliputian. Yet the committee "had a time," which at length came to an end, by their coming to the only reasonable decision that could be made, and meet the requirements of the society.

The show of blood horses was very good. First on the list for examination, was the celebrated mare Fashion, the victress of Boston, and, in her racing days, the most renowned four mile runner on the American turf. She is now owned by Messrs. Reber & Kutz, who reside in the northern part of the State. Fashion is a chesnut, and has a foal by imported Monarch at her side, likewise a chesnut. She was led out and examined by thousands. The next celebrity was the imported thoroughbred horse Bonnie Scotland, to which was awarded the first premium in his class. Bonnie Scotland is from Queen Mary, the dam of the celebrated Blink Bonny, and Iago. He is a bright bay, with a dark mane, tail and legs, stands about sixteen hands high, and is remarkably well proportioned. He is a good horse,

but we think no such horse for our State as imported Stone Plover, who excels him in size, substance, and style, and is far superior to him in breadth of loin, powerful back muscle, depth of flank, immensity of hind quarter, and great knees and hocks.

The second premium in this class was awarded to a horse named "Sweet Owen," but on what grounds we could not say. He was by no means as good a horse, either in appearance or in substance, or in performance, and certainly no better in pedigree than his chief competitor Col. Grayson, the son of Glencoe, and who is now owned by Mr. Fitch, of Cleveland. Sweet Owen was by Grey Eagle, out of Blinky, a mare that was the dam of Kentucky Flying Dutchman. Sweet Owen was a bay, light in substance, about 15½ hands, rather elegant, quiet in appearance, with but little show of that nervous vigor and liveliness of manner we like to see in the eye and movement of a stock getter. There were some other fine 2 year colts on the ground, particularly one named Sir Tatton Sykes, imported by Mr. James Fullington of Milford Centre, Union County, who had a large amount of most splendid stock.—Young America was also a two year old colt of great beauty and promise.

The ring to exhibit horses was a very level space, surrounded by a track equal to one-third of a mile in extent. The turns were rather short. On one side was an immense stand, rising with tiers of seats, one above another, to the height of full twenty feet from the ground, and to this ladies alone were admitted. This was filled, on the afternoon of the third day of the fair, when the Governor reviewed the military, and its appearance was very grand, affording a good idea of what the famous hanging gardens of Babylon must have looked like when in full bloom.

Amongst the machinery and implement department, we noted particularly Wetherell's patent horse hoe, as something new, for the culture of corn. This hoe is in the form of a shovel plow, with rakes behind which revolve by means of gearing, and which throw up the loosened mold upon the corn, riddling out the weeds and grass very thoroughly. Nearly all who saw the operation of this machine were pleased with it.

Daines had his tile machine in full blast, and worked off tile satisfactorily to those interested in the manufacture of these articles. He completely disproved John Johnston's assertion in the Ohio Farmer, that large tile could not be manufactured by it, as he made some on the ground—six inches in width and eight in height, in fact, of as large a size as is ever used or required by those laying down drains. Daines was awarded a first premium on his machine as a hand tile maker.

It is satisfactory to be able to state that not only did Michigan men contribute liberally to make up the exhibitions, but, in return, nearly every article shown or exhibited bore off handsome premiums. We hope our Ohio neighbors will reciprocate with us.

Horticultural Department.

The American Pomological Convention.

BLANCARD HOUSE, New York, Wednesday evening, Sept. 15th, 1858. }

R. F. JOHNSTONE, Esq.:

Dear Sir:—After two days attendance upon the sessions of the American Pomological Society, at 11 o'clock, P. M., I have just found my way to my room, for the purpose of dropping a few lines to the readers of the Farmer, respecting the doings of the noted horticulturists here gathered together. We had a very pleasant trip of twenty-eight hours to Buffalo on the propeller Free State, belonging to the Western Transportation Company. Thence taking passage on the Buffalo and New York & Erie Railroad, were whirled rapidly across the Southern tier of counties of the Empire State, with its wild and varied scenery. In passing along, I did not fail to observe that here, as in our own State, the wheat growers seemed to be resolved to be in advance of the midge, if early sowing will secure this object.—Most of the wheat was already sown and well up. So far as could be observed in passing, the orchards, with rare exceptions, were bare of fruit, even more so than at home. In the mountainous region along the Delaware, some pieces of corn appeared to have been already killed by the frost. Indeed, if we may judge by the crops still upon the ground, the country would seem to be but illy adapted to the production of this crop, or *anything else*, except the brambles and evergreen shrubs indigenous to the soil, although I was assured that the land improved in quality as we go back from the river. We arrived at this city on Monday evening, and after running the gauntlet among agents, runners, hack men and the like, and, as a matter of course, getting a little flurried, I finally brought up at this establishment (the Blancard House, corner of Broadway and Twelfth streets), where the arrangements for the convenience and comfort of visitors are ample, meals being furnished at all hours, enabling those having business to transact to come and go at their pleasure. On Tuesday morning I set out in search of Mozart Hall, where I found the President, Hon. Marshall P. Wilder, with a large number of the members already engaged in arranging their fruits for exhibition.

It soon became obvious that the room, although a large one, would be inadequate to a fair display of the fruits on exhibition, and as the time was already arrived for the session of the Convention, it was called to order in the public hall, while persons were employed to remove the fruits to a more commodious room.

The Convention is a very large one, and represents a wide range of country, and, notwithstand-

ing the unfavorable season, the display of fruits is very large and exceedingly fine, covering four broad tables, each seventy-five feet long, with dishes closely arranged.

The influence of the pear mania is shown from the fact that a very large proportion of the show consists of this fruit, of which Ellwanger & Barry, of Rochester, N. Y., contribute over two hundred varieties, far in advance of all others, in size and beauty, taken as a whole, if we except a few limited collections from the South, which are warmed up into a brighter glow by the fervor and brightness of a more vertical sun, and two or three from the North, which, from some unexplained cause, have put on an amount of coloring quite unusual among Northern fruits.

The President also shows a very large collection of pears, numbering one hundred and forty-four varieties. Wm. Reid, of New Jersey, has one hundred and four varieties.

Of native grapes, there is a large and most beautiful display, including all the recent varieties of note. Among these, Delaware stands unrivalled for beauty and flavor, although closely followed by Rebecca, Diana, Clara, Raabe, and others.

The Hartford Prolife is really, as its name implies, an enormous bearer, and, together with Concord, is rapidly rising in the estimation of growers. Although they cannot be considered equal to Isabella, or Catawba, they must, doubtless, supplant them to a great extent, at the extreme north, where those varieties do not fully mature, except in favorable seasons or in sheltered localities.

The Logan is also shown by Mr. Thompson of Delaware, Ohio, and appears, to be one of the earliest, and of very fair quality.

The Anna, another recent seedling, is shown by Dr. Grant, of Iowa. It is an exceedingly beautiful greenish white grape, larger than Rebecca, but hardly of the highest quality, judging from the few specimens shown. It is not yet offered for sale.

Several other seedlings were shown, most of them indifferent, and some of them utterly worthless.

The Northern Muscadine was also on exhibition, and, with those to whom their foxiness is not too objectionable, they would be esteemed of very tolerable quality, though decidedly too pulpy. Those who spoke of them at the Rochester Convention two years since, rated them too low.

The seedling grape alluded to in the Farmer for September was inquired for, but it was not on exhibition, and no one was able to give any explanation respecting it. The general impression is that it is a humbug. It claims to be a cross between the native and foreign varieties, but such a cross is, by many, considered impossible, while if produced, its adaptation to our climate is very much a matter of doubt.

The show of apples is quite limited, and the specimens are not up to our Western standard, if we except a lot of seventy-seven varieties shown by Westbrook and Mendenhall, of Greensboro, North Carolina, which are very fine. Indeed, although no larger than we frequently see them in Michigan, we can hardly hope to rival the beauty of color and maturity of flavor imparted by their fervid climate.

The Catawissa Everbearing raspberry, and also a newer variety called Bagley's Everbearing, are shown upon the branch, and, although neither of them is of superior quality, they must be considered highly desirable, as they extend the raspberry season until frost.

Mr. Joshua Pierce, of Washington, D. C., has on exhibition several enormous green-fleshed melons, which were of the finest quality, as the writer has the most conclusive proof.

At a late period of the session, the venerable Nicholas Longworth made his appearance in the Convention, and was conducted to a seat upon the stand, where he was greeted by the audience with great enthusiasm.

At a late hour on Thursday the Convention adjourned, to meet at Philadelphia for its next session in 1860. The session has been a very laborious one, with a very large attendance throughout, and has done much for which the country at large owes them a debt of gratitude.

T. T. LYON.

Bulbs—Preparing for Spring.

There are no varieties of plants which afford more satisfaction to the amateur gardener, or prove more ornamental than the bulbous rooted. At a season when other plants are merely getting ready to push out their leaves they are in full blow, filling the air with their fragrance, or rendering the door yard a delight to the eyes by their brilliancy. They repay also all the care expended upon them, as they take up but little room. A rich bed or row of them can be planted anywhere under a window, or in a square or circle before the door, so that they will really prove a delight to all who see them. As they unfold their flowers at a time when there are few other attractions, they are watched with pleasure and exceeding interest by the cultivator.

The time to prepare for planting bulbs is now or any time during the months of October and November, before the frosts come. The soil where they flourish best is a light sandy loam, perfectly dry.—Clayey soil is totally unsuitable, and if there is clay in the earth where the beds or border is to be made, it had better be dug up and carried away, to the depth of at least two feet, and the cavity piled up with sods dug from some old light soil pastures, well trodden down, with a covering of old manure from a hot bed. The top soil to the depth of eight or nine

inches, should be made of one part clean sharp sand, and the remainder equal parts of loam made from marsh muck that has been exposed for a long time to the air, and the scrapings of the barnyard, then crushed and well mixed, and, if possible, passed through a riddle or a sieve. The bulbs should be sunk in this soil at least six inches below the surface, and the whole should be pressed down solid. After hard frost sets in, a covering of loose straw to the depth of two or three inches ought to be thrown over them for protection. As soon as the snow is off the ground in the spring this covering must be taken off, and the beds or plats where the plants are growing kept free from weeds and grass. The different varieties can be supplied by the Messrs. Thorburn of New York, or Prince, of Flushing, at about the following rates: The crocus, of which the white and purple varieties may be had for twenty cents per dozen; Jonquils, of which good varieties are sold at 50 cents per dozen. Both these are small, and come in as the earliest. The Narcissus and the Hyacinth are next, and good varieties of the former may be had for 50 cents per dozen; of the latter the price is variable, but good double varieties, white, pink, blue and purple may be had at prices varying from one dollar to ten dollars per dozen; but fine enough varieties to start a good bed may be obtained for two dollars. Then with these, there must be Tulips which come in just as the others have done flowering, and of this beautiful plant the varieties are innumerable. We named quite a list which was grown at the Dougall Nurseries in Windsor last year, in the September number. To that list we can add nothing, as the varieties named there comprise nearly every desirable shade necessary to form a brilliant collection.—Messrs. Thorburn and Mr. Prince furnish the bulbs at rates varying from \$1 per dozen to \$3. When once some of our readers try the effect of having a few early flowering bulbs in their flower borders, they will not regret the outlay, nor the care they have expended in securing such a spring ornament.

Culture of the Gooseberry.

When selecting young plants from the nursery, if it is found that the cuttings have been planted at nearly equal depths, choose the best shaped and most vigorous plants, and it is important that the roots should spring as nearly as possible from a common centre. Plant in October and November, and as shallow as possible. The latter is a point which cannot be too much insisted on, for the health and productiveness of the trees and the quality of the fruit are much influenced by the depth at which they are planted. Of a lot of trees which I once cultivated with a view to competition, the one which was the shallowest planted was the most successful. The main roots were so near the surface that I had much difficulty each year in paring off a sufficient quantity of earth to apply manure without coming in contact with them. I showed fruit of this variety

(the Lion) for three successive years, and all were struck by their size and beauty.

In transplanting take care that the roots are mutilated as little as possible, and see that the ground in which they are placed has been previously trenched at least three feet deep, and well manured.

In training it is desirable that the tree should grow somewhat in the shape of a cup, because the branches do not then so much shade each other, a greater breadth of foliage is exposed to light, and the fruit can be more conveniently gathered. The tree may be easily made to assume this shape; all shoots which push where they are not wanted should be pruned clean off, and it should be borne in mind that it is the end buds which generally start, and consequently a shoot may be made to grow in any direction desired merely by cutting back to a bud which points in that direction.

It is customary to manure Gooseberry trees grown for ordinary purposes every other year. It may, however, be better to apply it every year if it be but half the quantity. It is not considered good practice to allow the whole of a crop of fruit to remain on the trees to ripen. It should be gathered at three or four different times; for if half of the crop is only ripened, owing to the superior size of the fruit, there will be nearly an equal bulk or weight when ripe as there would have been if the whole had been permitted to remain.

As there may be some who may wish to grow Gooseberries for competition, I shall briefly give the mode of culture which I should adopt if that were my object. If I had a stock of the varieties I intended to cultivate, I would raise my own trees. In the beginning of this month or say at the present time, I would remove a ring of bark from the lower parts of several shoots which I intended for cuttings; a callus would soon be formed, and by applying wet moss or soil to the part, roots would soon be emitted. In September when nearly all the foliage had fallen, I would separate them from the parent trees and plant them; and as soon as all the leaves had fallen I would cut them down to three or four buds which I intended to form the branches, and of course all buds below these must be carefully rubbed off.—I would prepare other cuttings by ringing them in September; but instead of rooting them on the trees, I would plant them in the same bed with the others. The bed I would prepare by removing the soil to the depth of three inches; I would then put on a layer of compost two inches thick, composed principally of decayed leaves, and on them put an inch deep of the ordinary soil of the garden, provided that it is in good heart. In this bed they should remain two years before planting them out. Water with manure-water in summer, train as recommended above, and by keeping the soil loose and open and free from weeds, fine fruit may be expected. It will, however, be vain to look for large fruit from trees after the seventh or eighth year, and, therefore, to be successful fresh plantations should be made sometime within that period. *M.—In Lond. Gard. Chron.*

The American Garden.

To some of our countrymen who are not familiar with this term,—though we believe it to be generally understood—it may not be unimportant to remark that the American garden is a peculiar feature of the higher cultivated and embellished English gardens and grounds, and is devoted mostly to

the growth of American plants which require a peaty earth, such as the Rhododendron, Kalmia, Andromeda, Rhodora, Azalea, Epigæ, Vaccinium, Ledum, Linnaea, &c., &c., and their allied species and hybrids, together with heaths, and some other natives and exotics, which require similar soil and treatment. Until the American Rhododendrons, Kalmias and Azaleas were introduced, there was no such thing as the American garden; but the magnificence of these with us neglected natives was so great, that no efforts were spared to bloom them well: and when it was ascertained that they could not be made to flourish under the ordinary treatment of other shrubs, but must have a peculiar loose and soft earth for their delicate, hair-like roots to penetrate; the term American garden was applied to the spot selected for these plants. Here, when the soil was properly prepared, they flowered in more than native luxuriance, and became the most attractive of all the beautiful shrubs collected from the temperate climes of the entire globe.

In some demesnes the Rhododendron and Azalea were planted to the exclusion of almost everything else. Highclere Castle, the seat of the Earl of Carnarvon, has a world-wide reputation for its American plants. It was here, upwards of thirty years ago, that the gardener, Mr. Carton, commenced hybridizing the American with the Indian species, and laid the foundation of the now magnificent hardy varieties which possess the brilliancy of the arbutum tribe with the hardness of our native kinds.—On this estate there are now miles and miles of drives faced with Rhododendrons. The American garden proper surrounds the house, and contains sixteen acres, and was originally clay upon chalk.—The entire natural soil was removed to the depth of eighteen inches, and replaced with peat. Here, disposed in circular, oval, and curvilinear groups, on grass, are Magnolias twenty feet high, Rhododendrons fifteen to twenty feet, and Azaleas ten to twelve feet. When in bloom, they load the air with their delicious breath, and thousands upon thousands of blossoms, in unbroken masses of color, form a scene which can only be seen to be appreciated.

At other places the American garden, though on a less extensive scale, forms the peculiar attraction of the grounds; but perhaps there is none equalling that of the nursery grounds of the Messrs. Waterer, of Knapp Hill, where the soil is a fine natural peat, just suited to the plants. Here they grow with a vigor and brilliancy of foliage unsurpassed. The eye extends over acres upon acres of Rhododendrons and Azaleas, with flowers of every conceivable hue, the plants being grown as bushes, pyramids and standards, the latter with stems eight feet high, and heads twenty feet in diameter. Though we only saw them in the autumn, we could well imagine how brilliant would be the scene in

"The lovely season at Knapp Hill, June and May,
Half pruned with spring, with summer half imbrowned,"

when these shrubs display their great heads of delicate as well as dazzling tints. A writer, in describing these gardens at the season of blooming, says that nothing ever gave him so much the idea of Paradise, or the gardens of the Peris, as the American nursery of Knapp Hill, where the variety and vast size of the Rhododendron, the dense thickets and hedges of Azaleas, the endless variety of color, the delicious fragrance, the songs of the nightingales which sought shelter among them, and the fine order

and keeping of the whole, left a more poetical impression of enchantment on his fancy than the princely Chatsworth or the gay Chiswick produced on him. To Messrs. Waterer are all lovers of American plants more indebted than to all other cultivators, for it was here that the present hybrid varieties of *Rhododendron* and *Azalea* which stand our climate were produced.

These are the plants which, *par excellence*, belong to the American garden, a feature which we yet in our own country, with very few exceptions, know nothing of, unless we visit the localities where the *Rhododendron* and *Kalmia* grow in their native luxuriance, seen by few and unknown by the many. So little do we prize our native shrubs, that we wait till they have the stamp of foreign approval before we begin to introduce them in and around our gardens. That there are difficulties in the way of growing them readily, unless the right course is pursued, is well known, and it is therefore with the hope of giving some aid in their behalf that we now offer some hints, by well known writers, as to the best means of accomplishing this work. Our article is penned for this purpose more than to show the claims of the so-called American plants upon our notice, for, when once seen, they need no other appeal to arrest at once our attention, and become favorites of all who admire rich verdure, and brilliant and fragrant blossoms.

First, then, to grow successfully all the *Rhododendrons*, *Azaleas*, *Kalmias*, &c., it is absolutely necessary that a loose, friable soil should be selected, or, if such a one cannot be found, it must be artificially made, bearing in mind that a clayey or calcareous soil is unsuited to their growth, and that they will, sooner or later, become sickly if planted in such a soil. Peat, or heath soil properly so called, is a very scarce article, and as difficult to procure, if not more so, than in England, where there are spots where the heather grows naturally, which abound with it. But we have in our country, in abundance, what will answer equally as well, BOG SOIL AND SAND. With these, and the refuse of the garden, such as clippings of hedges, small brush, &c., well rotted down, a soil may be made which will grow all the American plants in great perfection.

The natural soil, if clayey or calcareous, must be removed to the depth of at least eighteen inches, and replaced with a mixture of this bog soil, sand, and refuse of the garden, in the proportion of about one-third of each. If the soil is loamy, a portion only of the loam may be removed; and if very sandy, a still less quantity may be taken away, for these plants do very well in a sandy loam, though they do not remain in perfection of bloom near so long.

The present is the season for preparing ground for planting in the spring, and, if the directions are followed which are laid down in the extract below, or as we have advised, the plants may be set out next April or May, and they will grow with the greatest vigor and soon attain a large size. Let it not be forgotten that the soil must be loose, sandy, deep, and moist, and then these elegant plants will thrive and bloom with a luxuriance and perfection unknown under the usual treatment in ordinary soils.

The *Musch Musch* Apricot is considered a good variety to fruit in Scotland, and is not liable to gum. It is also valued as one of the hardiest and most productive kinds.

Horticultural Notes.

Preserving Pears.—At the late meeting of the Cincinnati Horticultural Society a member remarked that he had tried two methods of keeping his pears, one by putting them in oats in barrels, and the other by first wrapping them in paper—separately—and placing them in boxes. Those in paper and boxed, kept much the best.

Plums.—Dr. Whipple of the Cincinnati Society found that his plums were preserved from the Curculio by permitting hogs to range under them. Plum trees, in the immediate neighborhood, to which the hogs had no access were badly stung and the fruit destroyed.

Mr. Consadine has claimed the premium to prevent the ravages of the curculio. A tree left in the midst of those subjected to his treatment, and which was not so treated, had all the fruit destroyed by the insect. His plan is to dissolve half a peck of slacked lime and two pounds of flour of sulphur in a bucket of water, which is to remain for forty-eight hours before use. This liquor is applied with a garden syringe when the fruit is about as large as a pea. This syringing is done in the afternoon and evening, as the insect works in the night. Mr. Thomas Ludlow of Yonkers, New York, also certifies in the Country Gentleman to the efficacy of this plan.

Watermelons.—L. P. Kneeland of Southfield favored us with a specimen of the Carolina Watermelon of which he obtained a few of the seed from us last spring. The watermelon which we had was very rich in flavor, and the flesh melting, and evidently a choice fruit. Mr. Kneeland is about the only one of our correspondents, who reports back the results of his trials of new seeds. This variety came from the Patent Office.

Pear Culture.—Dr. Kennicott of Illinois, writes to Hovey's Magazine as follows on pears:

"Of the sorts of pears that have withstood every enemy in our grounds, I name Buffum as the most certain. It has never "blighted" or lost a twig by frost, and though long in coming to bearing, it has never failed of a good crop of very good fruit. I may say about the same for Fondante d'Automme, (Belle Lucrative,) and, in hardness and fruitfulness, and tolerably good old Bon Chretien Fondante comes into the same category. Flemish Beauty is another of our escaping sorts, and our best bearer, perhaps. Buerre Diez has also escaped, and borne well for two seasons. Dearborn's Seedling blighted some but has borne well; Swan's Orange about the same. Seckel has not blighted much, but nursery trees have appeared tender; the fruit is fair here.

These are all standards. On the quince, perhaps Forelle has stood as well, and borne as much, as any of the living specimens; I don't think much of the fruit, however. I never yet got the Duchesse d'Angouleme to bear, though I had large trees of it killed down to near the ground, two years ago. But let me tell you, that within ten miles of me, near the Lake, the Duchess has done pretty well in the fruiting line. And here is the point. Locality, as much as culture, governs failure and success. Composition of soil, and its condition in respect to standing water—all the phases of climate, and even the slight differences in accidental protection—altitude, aspect, &c., incident to localities in the same region, affect success in pear-growing more than most of us suspect. And from an old man, of much sad and expensive experience in attempts to grow pears, you may the more readily accept the prediction I now venture to make, that within the next decade, it will be abundantly proved, that some va-

rieties of the pear can be grown in certain portions of Illinois as well as about Boston. The "blight," as I before said, is the only universal enemy, and that is by no means constant to locality, variety, or season; and the right sort, in the right soil and climate, with the right training and cultivation, is just as like to succeed here as there. But when we cannot choose our soil and climate, we must find varieties adapted to our region, and supply, by art, the defects of drainage, and the special wants of this best of all the large fruits of a temperate climate."

The Datura Wrightii is described in the Gardener's Chronicle as a "splendid annual," a "magnificent thing," and a free bloomer. The seeds vegetate freely. Its only fault is that it does not continue for a long time in bloom.

The Camelia.—The breathing pores in the leaf of the Camelia are rather small, and therefore easily choked up with the dust from the grate or the room in the winter season. Hence it is well to wash off the leaves with a syringe once in eight or ten days. I have, for a couple of years practiced the following mode with the best results. I wrap the pot round about with a bit of coarse cloth to prevent the soil from getting displaced, and from getting over wetted, I then set the plant down sideways in a bath tub, and give it a gentle shower bath of lukewarm water from the nose of a watering pot. I am satisfied that a shower bath is of as much benefit, and as necessary to a sedentary man.—J. W. B. in *Horticulturist*.

Soil for pot plants.—Leaf mold from the woods, one third, old manure the scratchings of the yard another third, and the rest turfy loam made from sods taken from sandy soil. The turf loam may be made by cutting green sods, and piling them up so that they will heat and rot.

Mountain Paeonies.—Now is a good time to set out some roots of the Mountain Peony. They need a light rich loose soil, and after being placed where they are to stand, on the approach of cold weather should have an empty tub or barrel turned over them, for protection. Nothing can be finer than this plant, when once it is well established.

Protecting Bees in Winter.

In Langstroth's work on Beekeeping, we find the following observations on the necessity of giving the Honey Bee protection in winter. The author says:

In our climate of great and sudden extremes, many colonies are annually injured or destroyed by undue exposure to heat or cold. In Summer, thin hives are often exposed to the direct heat of the sun, so that the combs melt, and the bees are drowned in their own sweets. Even if they escape utter ruin, they cannot work to advantage in the almost suffocating heat of their hives.

But in those places where the Winters are long and severe, it is much more difficult to protect the bees from the cold than from the heat. Bees are not, as some suppose, in a dormant, or torpid condition in Winter. The wasp, hornet, and other insects which do not, like the honey-bee, live in families in the Winter, lay up no stores for cold weather, and are so organized as to be able to endure in a torpid state, a very low temperature; so low that it would be certain death to a bee, which when frozen, is as surely killed as a frozen man.

As soon as the temperature of the hives falls too

low for their comfort, the bees gather themselves into a more compact body, to preserve to the utmost, their animal heat; and if the cold becomes so great that this will not suffice, they keep up an incessant, tremulous motion, accompanied by a loud humming noise; in other words, they take active exercise in order to keep warm! If a thermometer is pushed up among them, it will indicate a high temperature, even when the external atmosphere is many degrees below zero. When bees are unable to maintain the necessary amount of animal heat, an occurrence which is very common with small colonies in badly protected hives, then, as a matter of course, they quickly perish.

Extreme cold, when of long continuance, very frequently, in thin hives, destroys colonies strong both in bees and honey. The inside of such hives, is often filled with frost, and the bees, after eating all the food in the combs in which they are clustered, are unable to enter the frosty ones, and thus starve in the midst of plenty. The unskillful beekeeper who finds an abundance of honey in the hives, cannot conjecture the cause of their death.

Bees will very seldom desert the combs containing brood, and hence when the honey in them is consumed, they will not, in a body, transfer themselves to other combs, but choose rather to die upon their young. This is a calamity which rarely occurs, in well protected hives.

If the cold merely destroyed feeble colonies, or strong ones only now and then, it would not be so formidable an enemy; but every year, it causes some of the most flourishing stocks to perish by starvation. The extra quantity of food which they are compelled to eat, in order to keep up the heat in their miserable hives, is often the turning point with them, between life and death. They starve, when with proper protection, they would have had food enough and to spare.

But some one may say, "what possible difference can the kind of hives in which bees are kept, make in the quantity of food which they will consume?" To this I would reply that we cannot move a finger, or wink even an eye-lid without some waste of muscle, however small; for it is a well-ascertained law in our animal economy, that all muscular exertion is attended with a corresponding waste of muscular fibre. Now this waste must be supplied by the consumption of food, and it would be quite as unreasonable to expect constant heat from a stove without fresh supplies of fuel, as incessant muscular activity from an insect, without a supply of food proportioned to that activity. If, then, we can contrive any plan to keep our bees in almost perfect quiet during the Winter, we may be certain that they will need much less food than when they are constantly excited.

In the cold Winter of 1851-2, I kept two swarms in a perfectly dry and dark cellar, where the temperature was remarkably uniform, seldom varying two degrees from 50° of Fahrenheit; and found that the bees ate very little honey. The hives were of glass, and the bees, when examined from time to time, were found clustered in almost death-like repose. If these bees had been exposed to thin hives, in the open air, they would, whenever the sun shone upon them, or the atmosphere was unusually warm, have been roused to injurious activity, and the same would have been the case, when the cold was severe; exposed to sudden changes and severe cold, they would have been in almost perpetual motion,

and must have been compelled to consume a largely increased allowance of food. In this way, many colonies are annually starved to death, which if they had been better protected, would have survived to gladden their owner with an abundant harvest—This protection, as a general thing, cannot be given to them in a cellar, which is rarely dry enough to prevent the combs from moulding, and the bees from becoming diseased.

Bees never, unless diseased, discharge their feces in the hive; and the want of suitable protection, by exciting undue activity, and compelling them to eat more freely, causes their bodies to be greatly distended with accumulated feces. On the return of mild weather, bees in this condition being often too feeble to fly, crawl from their hives, and miserably perish.

Notes on New Products.

MR. JOHNSTONE:—With your permission, I will give your readers the benefit of a few facts concerning the progress of some new products, called by some people "humbugs," (I refer to that class of progressive (?) farmers who have "foreordained" that there is "nothing new under the sun" that will ever amount to anything good.)

First, the *Chinese sugar cane*, in spite of late springs and cold rains, is coming on rapidly, and will, in a few days, be fit for the mill. My success last fall, in making 45 gallons of excellent syrup, has induced me to purchase a good mill and apparatus for working up all the cane in this vicinity. With some experience and considerable of study, I hope to make an article of syrup—if not of sugar—this fall, that will compare favorably with any Louisiana sweetening.

Hungarian Grass or Millet. I have given this a trial and find it all it is recommended to be. Mine has produced at the rate of 22 bushels of seed, and 2 3-4 tons of hay to the acre, under very unfavorable circumstances, this season. I am of the opinion that the Hungarian is a great acquisition to the farmers of this State, and will take the place of Timothy and oats, if not of clover, for stock purposes.

Egyptian Millet. I must say that of all crops for soiling, this goes ahead. I sowed about an acre last spring, which I began to cut and feed to my team about the 20th of June. They have had but little else since, and have fattened on it, consuming less than half an acre in two months. The remainder now stands 5 feet high, as thick as it can stand, the heads, many of them the size of an ear of corn. The first cut has grown again, and bids fair for a five foot growth before frost. Give me Egyptian Millet for green feed for horses, or any other stock.

Rhode Island Premium Corn. I find this corn to be the most prolific of any I have ever seen. I have hills, the product of only one kernel, that contain from six to ten good sized ears of corn. It is full as early as the King Philip, and, with me, will out yield it by one-half. The cob is very small and

beautifully filled out at the ends. It is a good, early kind for the garden, and, had the farmers west had this variety to plant last spring (in June) they would now be rejoicing over good crops of corn, and, like me, would say I am done with your late mammoth varieties, which produce worthless stalks, and unripe grain, or none at all.

Sweet Potatoes. I am trying my hand with the celebrated "Nansemond, or Lebanon yellow" sweet potato, and am succeeding, beyond my sanguine expectations. I have them now over a foot in length, and two inches diameter, planted without artificial heat, the same as the common potato. We are now using them, and find them equal to any I ever tasted in New York from the South. I shall have a splendid crop of them, and can recommend them with confidence for northern cultivation.

The Siberian Potato. These are again taking the lead of my other varieties for beauty, yield and size. I have some old varieties of this potato now in my cellar, which are as sound as when first dug. We cooked some a few days ago, and found them as good as they look. They have kept sound just a year.

Sweet Corn. Of all garden corn, for boiling or for succotash, I challenge the world to beat the "Excelsior, or Mammoth Sweet Corn." The ears grow over a foot in length, kernels very large, is nearly as early as any, and keeps good and tender on the stalk until winter, and, even then, is as good as the much puffed Evergreen.

Melons. It is astonishing how, with a careful selection of varieties, and keeping them unmixed and pure, what delightful watermelons we may have.—If the editor should happen this way about this time, I would convince him on this subject. I have 12 new varieties, all superb, the "New Chinese Orange" being both novel and edible. The Chinese cleaves from the pulp like an orange.

Wheat. On this head I would say that I have what I believe to be a new variety. I obtained it in this wise: From the time the Australian was first introduced I have observed a certain variety growing among it, which has withstood all the hard winters and insects up to this time, while the Australian and many other varieties have given way, this has increased, and proves to be early, prolific and hardy. I have a stool of this wheat now by me containing 23 heads, each averaging 62 kernels to the head. The kernel is of good size, rather shorter and broader than "Soules," and as white. I selected from among the Australian, enough of this wheat to sow four rods of ground; the product was 45 pounds, which is a little over thirty bushels to the acre, the straw was not affected in the least by rust, and the grain was ripe some five days earlier than Soules and Mediterranean, sown the same day. Until I learn the original name of this wheat (if it has any) I shall call it Tooker's Wheat. I shall sow it again this fall, and report upon it again after harvest.

Yours truly, D. D. TOOKER.

NAPOLCON, MICH, Sept. 3, '58.

The Household.

"She looketh well to the ways of her household, and eateth not the bread of idleness."—Proverbs.

EDITED BY MRS. L. B. ADAMS.

Roses Bloom.

By the thorny wayside hedges,
Blushing o'er the rocky ledges,
Creeping 'mid the mossy sedges,
By the woodland streamlet's side,
Roses bloom.

In the palace gardens glowing,
When the winds of June are blowing,
Or in darkened windows, knowing
Scarce the lamplight from the sun,
Roses bloom.

When the summer sun declining,
Slantly through the wood is shining,
Rustic lovers sweetly twining
Blossoms with their vows of love,
Bloss the rose.

Through all life it shall remind them
Of the spring-time left behind them,
And the years to come shall find them
Blended like the bloom and fragrance
Of the Rose.

Now the mother watch is keeping,
O'er her infant sweetly sleeping,
And in transport almost weeping,
As she sees on its fair cheek,
Roses bloom.

Then while grief her heart is rending,
In her silent sorrow bending,
Tears are with the dew-drops blending
On the rose that blooms as fair,
On its tomb.

Beneath the hedge the rose is dying,
From beauty's cheek the bloom is flying,
And youth and beauty lowly lying,
Leave the world they once have blessed,
Wrapped in gloom.

But where they died new charms are springing,
As death its ceaseless change is bringing;
So life to life is ever clinging,
And still for love for life and youth,
Roses bloom.

Sweet Home—A new experience.

A letter came into our hands last month, a small but plump, neatly-folded letter, bearing upon its seal the motto, "Sweet Home." The superscription was in a childish hand, and a glance at the post mark told us whose familiar names we should find within—the names of two young daughters of one of our subscribers, whom, though we have never seen, we have come to regard as cherished members of the Household from the frequent friendly notes received from their hands. These notes are very unpretending in style, the composition is like simple, natural, girlish talk, and no doubt the youthful writers would be quite astonished and puzzled if any one were to tell them they had been drawing artistic and beautiful pictures of country life, and giving a most

charming inside view of their own "Sweet Home;" yet, the few lines they have sent us from time to time, beginning with the first timid and indistinct sketches of more than a year ago, have given form and feature to the landscape where they live, have located the "log house," the pioneer's home, and peopled it with just such beings as an artist would be most likely to put in a picture of "Paradise Regained"—father, mother, sisters, and a baby brother! A sweet and sacred band. The baby of course, as in all homes, is in the centre of the foreground, the most prominent figure, the fairest, fattest, dearest baby in the world! growing so fast, crowing and laughing so merrily, showing two teeth already, and cutting more! The father has come in from the fields to romp with his boy a minute or two before dinner, the mother looks on with her quiet smile as she passes, busy with the noon day meal which her eldest daughter assists in preparing, while the youngest, a pet-loving little girl just from school, lays aside her Colburn and Sanders and goes to gather clover for her tame rabbit, Johnny. How plainly we can see them all.

And out of doors the scene is quite as pleasing. A farm hewn out of the woods and divided into fields for grain and pasturage, the summer crops harvested and well cared for, the corn ready for the huskers as autumn draws to its close, the barn, as this last letter says, "far better than the house," the sleek domestic cattle, and above all, the five dear little calves, which our youngest correspondent has petted, and named "Fanny, Duke, Cherry, Diamond and Daisy,"—all are as distinct to our mind's eye, as life-like and real as if we were standing, as we hope to be some day, at the door of the log house, gazing on the pleasant scene without, and the blessed one within.

Your kind letters are appreciated, little-friends, and perhaps all the more thought of because written to one who has no "sweet home," nor any of the dear associations by which you are surrounded, to cheer her after the weariness of daily toil. For your invitation to visit the "home in the woods" we thank you, and, without making any appointment, will simply say that the new duties we have been forced to perform may lead us to your county in the course of the autumn. If so, we intend to see that baby and all the pets, and shake hands with the two young friends whose pretty motto gave us the subject for the first division of these remarks.

And now for the second—the new experience. Since the falling of prices for farm produce, the breaking of banks, and the almost universal business failures of 1857, the MICHIGAN FARMER has failed to receive from its subscribers the funds necessary to meet the expenses of its publication and give its editors a comfortable living. Nevertheless it has struggled along, and kept above board, hoping that

some of the promises of "money after wool time, and harvest" would be remembered and redeemed and enable us to square accounts with the pressman and the paper maker. But it was not so. Farmers forgot the FARMER's claims, but the printer and paper maker did not forget theirs. Our Travelling Agent was ill in a distant part of the State, our Editor, now Secretary of the State Agricultural Society, must stay in town to aid in superintending arrangements for the State Fair, and there was nothing left but for the Household to come forward and take active part in out-of-door business—in other words we must make out bills for our delinquent subscribers, and go and present them in person. (We had tried it by mail till satisfied that our postage was thrown away.) Not being of the strong minded class, we ventured out with fear and trembling, yet not without strong faith in our ultimate success, based on the confidence we had in the honor of those to whom we had to appeal. The result of the first effort, a week spent in traveling over some eight towns of one of the oldest settled counties in the State, showed that our confidence was not misplaced. Never were delinquents more honorable. There was no lack of money with them, and no design to keep it from the FARMER: only, a dollar or two was such a small amount, and so easily forgotten! Alas, they do not know what great expenses we have to pay with these little dollars, nor think that thousands all over the State are holding our funds from us in the same way, some perhaps waiting for the agent to call, others thinking the sum too trifling to be of much account to any one, and some, it may be, not thinking of the matter at all. However, our experience as collector has, so far, given us a far better opinion of our subscribers than we had while sitting in the office and looking at the blank columns opposite their names, as we have done while mailing their papers month after month for the past three years. Not that we would think less of them were they to send the money in, and save us the trouble and expense of going for it, but, aside from money considerations altogether, there is a satisfaction in knowing where our friends live and how they look, so that in writing their names hereafter we shall have some more definite idea of them than could be gained from their position on our books. In this one trip we called on over one hundred of our subscribers, in villages and on farms, some at their houses, some at their shops, offices or stores, and some at their plows in the fields. Brief as these calls necessarily were, they have left in our mind many pleasing recollections and delightful pictures of rural life, and introduced us to many persons and families whose warm-hearted friendship was received as gratefully as it was cordially given.


The success of our first attempt in this new field of labor has paved the way for further efforts, and

though we do not intend to warn or threaten any particular locality, there are a few pleasant spots in Michigan we mean to set foot upon during the coming autumn months, and only hope for a reception as cheering and encouraging as has been given in the places already visited.

Since the above was in type we have made another week's tour among our delinquent friends, and have met with even more encouraging success than before; which result enables us to send out the FARMER a little in advance of time, instead of being half a month behind, as we were with the September issue. And now that the Household is fairly in the field, it will follow as a matter of course that the harvest *must* be gathered. So far we have found only two or three weevils, in the shape of careless agents who have been eating of our substance, and, we believe, but two instances of shrinkage from the rust of debt or hopelessly collapsed purses.

All that has been said of friendly welcomes, and of kindly assistance rendered during our first tour, is applicable to this, and more also. The tract of country through which we traveled is altogether too lovely to be passed by with the indefinite statement that it was "somewhere in Michigan." If any one imagines that Michigan is poor, that her farmers are struggling for life through swamps which are threatening to sink them, or sand banks movable by every gust of wind, just let them take the circuit of Washtenaw county, the Southern part of Jackson, and through Northern Lenawee. No more beautiful or productive farming lands could be desired, and, as far as our individual experience goes, no more generous, intelligent, or energetic class need be looked for in any community, than those who till these splendid farms and enjoy in their comfortable homes the bountiful products of their industry. Yet, with scarcely an exception, they are all quiet, home people, making little noise in the world, but progressing steadily in the improvement of their farms, their own minds and the education of their families. The books and papers on their tables show that they are not ignorant of the world's doings, and their fine fields and improved stock give evidence that they are keeping pace with the progress of the times.

It is not our design to take notes as we go, nor to devote time and space to praising people because they have met us kindly, but this much we felt to be due to that delightful portion of our State and its gratefully remembered inhabitants.

 If preserves are fermenting, boil them very gently, adding salaratus about the size of a small pea to a quart: skim them well and scald the jars before putting them up again. Sprinkle a little powdered white sugar on top of jelly if they are inclined to mould.

SWEET POTATO PUDDING.—Take five eggs, half a pound of butter, quarter of a pound of sugar and as much sifted sweet potato as will thicken it. Add the juice and grated peel of a lemon; beat it light, and bake in a moderate oven.

MICHIGAN FARMER.

ROBERT F. JOHNTONE, EDITOR.

DETROIT, OCT., 1853.

State Fairs for 1853.

Connecticut, Hartford, October 12, 13, 14, 15.
 New Hampshire, Dover, October, 6, 7, 8.
 New York, at Syracuse, October, 5, 6, 7, 8.
 Indiana Indianapolis, October 4, 5, 6, 7, 8, 9.
 Iowa, Oacaloosa, September 28, 29, 30 and Oct. 1.
 Kentucky, Louisville, September 28, 29, 30 and Oct. 1, 2.
 Pennsylvania, Pittsburgh, September, 28, 29, 30, 31, and Oct. 1.
 Rhode Island, Providence, September, 14, 15, 16, 17, 18.
 United States, Richmond, Va., October, 25, 26, 27, 28, 29, 30.
 Vermont, Burlington, September 14, 15, 16, 17.
 Wisconsin, Madison, October, 4, 5, 6, 7.
 Canada, Toronto, September 28, 29, 30 and Oct. 1.

County Fairs.

Clinton, St. Johns, Oct. 13, 14, J. C. Brunson, Secretary.
 St. Joseph, Centreville, Sept. 29, 30, Harvey Cady. do
 Eaton, Charlotte, Sept. 28, 29, John Morris. do
 Genesee, Flint, Oct. 6 and 7, F. H. Rankin. do
 Lenawee, Adrian, Oct. 6 and 7, Andrew Howell. do
 Berrien, Niles, Oct. 6 and 7, R. W. London. do
 Jackson, Jackson, Oct. 6, 7, and 8, J. H. Hubbel, do
 Barry, Hastings, Oct. 13, 14, R. B. Wightman. do
 Kent, Grand Rapids, Oct. 5, 6, 7, E. M. Ball. do
 Calhoun, Mar. hall, Oct. 5, 6, and 7, E. H. Lawrence. do
 Branch, Coldwater, Oct. 6, 7 and 8, J. G. Parkhurst. do
 Shiawassee, Corunna, Oct. 12 and 13, P. S. Lyman. do
 Livingston, Brighton, Oct. 6, 7 and 8, E. T. Burt. do
 Hillsdale, Jonesville, Oct. 6 and 7, F. M. Holloway. do
 Macomb, Romeo, Oct. 6, 7 and 8, J. Wight. do
 Oakland, Pontiac, Oct. 6, 7 and 8, J. R. Boorman. do
 Kalamazoo Horse Show, Kalamazoo, Oct. 12, 13 & 14, G. F. Kilder.
 Cass, Cassopolis, Oct. 8, and 9.

The State Fair and the Michigan State Agricultural Society.

During the past month we have received several letters making inquiries as to there being two State Fairs held in Detroit, and some of the inquirers seemed to be very merry over the idea, as Detroit was generally found with her hands quite full when she had to make preparations for one. We have also noticed a few references to such an event in other papers. In reply to such allusions and inquiries we insert the following card, published by order of the Business Committee, in all the papers of the city of Detroit, and which will afford some explanation of the very extraordinary phenomenon which is threatened by having two State Fairs.

To every man of common sense, who is acquainted with the fact that there is but one legalized State Agricultural Society, that its officers are regularly elected by the people themselves, and that but one State Fair can possibly be held, the assumption that a few individuals, brooding over fancied wrongs or grievances can establish a State Society, is simply preposterous, and is hardly worthy of contradiction. The following card, however, explains the whole matter:

Editor of the Detroit Tribune—Having noticed an article in the *Detroit Advertiser* of this morning stating that there would be two State Fairs in this city next week, we deem it proper to correct this statement, as it leaves a wrong impression on the minds of the community. The State Agricultural Society is a regularly chartered institution, supported by the agricultural community of the whole State, with its Executive Board and regularly elected officers. On the 19th of July last, the President and Executive Committee met in this city and after visiting the several localities which had been pointed out by various citizens of Detroit as proper places to hold the State Fair, if held in Detroit, had propositions laid before them by two parties, viz., S. S. Foster in writing, and Harvey King, by E. N. Wilcox, Esq., verbally. The proposition of Mr. Foster were considered by the committee very largely better for the interests of the Society.

This decision gave such offence to Mr. King that he denounced in our presence the action of the State Society, threatened to expend \$2,000 to break down the State Fair if it should be held in Detroit, and get up one on his own grounds in opposition which should injure its exhibition and cripple it in its resources. This design he, in common with a few others who believe that money is to be made out of the operation, has partially carried out, and hence the preparations noticed in your paper of yesterday. Great pains have also been taken to circulate reports throughout the State and the immediate vicinity that there was a divided feeling among the members of the Executive Board and the members of the Society, and persons have been employed to urge this as a reason for a new organization.

We make the assertion here that there is not the least truth in these reports, that there never has been a year when the whole Board has been so unanimous in doing only that which was considered for the best interest of the society, and that they are now working together with the greatest harmony to render the coming exhibition one of the very best that has ever been held. The undersigned esteem it their duty now to state this, and also to expose the object and designs of the parties who have traduced the State Society, and who have endeavored to get up a division and a dissension in its ranks, that it may result in a speculation profitable to them but certainly most injurious to the cause of Agriculture and the interests and objects which the State Agricultural Society was formed to promote.

Published by order of Committee,

E. N. WILCOX,

Chairman of Business Committee.

R. F. JOHNTONE, Sec'y.

DETROIT, Sept. 22d, 1853.

We learn that C. L. Flint, the Secretary of the Massachusetts board of Agriculture has just ready for press a work on Dairy Management which will be one of the best and most comprehensive books of the kind issued from the press.

Notes and Queries.

The Agricultural Exhibition at Toronto.—The people of Toronto and of the county have raised \$24,000 with which they are erecting a building of iron and glass, 286 feet in length and 144 in width, which is to be used for the purposes of the Provincial Agricultural exhibitions. There is a great deal of public spirit manifested by the local and provincial governments and the people in the support of their Board of Agriculture.

Volney Hascall Editor of the Kalamazoo Gazette, Herman E. Hascall of the Telegraph, and Geo. A. Fitch, Esq., have been appointed a committee to invite and tender their brethren of the Press throughout the United States, the hospitalities of Kalamazoo during the great National Horse Show. This invitation the editorial fraternity may feel convinced is far from being idle words. The show of horses promises to be the greatest ever held in the northwest.

Kentucky Stud Book.—Mr. S. E. Bruce of Lexington Kentucky, is about to prepare a stud book for that State. Such a work will be of great service to breeders both in that state, and in others. Such a work is wanted to keep up systematic breeding.

Chess.—We note that J. H. Klippart, Esq., Secretary to the Ohio State Board of Agriculture, has made a report on some stalks of wheat and chess which were referred to him, as growing together so compactly, that the two plants seemed apparently to spring from one stem. He says:

"A few days since I carefully unfolded the wrappers from the stalks which you had the kindness to bring to this office for examination, and was surprised to find proceeding from apparently the same root, several stalks bearing wheat, as well as several bearing chess. Almost any one, at first glance, would have concluded that the stalks in question fully decided the endless controversy that wheat will turn to chess. But upon a closer examination, it soon became apparent that the crown of the roots of the wheat-bearing stalk, although in close proximity to, yet were not attached the crown of those producing chess.

After being immersed in water for twenty-four hours, to loosen the soil, and after having removed every particle of earth, I again examined the roots very closely. I found them interlaced in such a manner as to form an almost inextricable mass, and in one place found them not attached by growth but both enveloped by the same covering. The roots differ some what in appearance under the microscope, but to the naked eye present the same appearance in structure.

Although as above stated, it appeared at first glance that wheat and chess or cheat came from the same root, yet in the entire lot of some five or six specimens, I found no difficulty in tracing the wheat stalk to its roots proper, whilst it was no difficult matter to trace the chess to its own and distinct roots. There is no doubt that a grain of wheat and one of chess were sowed in close proximity, but none of those who witnessed the disentanglement of the roots of the plants in question were of opinion, after closely examining them, that both wheat and chess emanated from one and the same seed."

The Oakland County Fair is to be held at Pontiac on the 6th, 7th and 8th of October next. The Hon. CHAS. E. STUART is to deliver the Annual Address. Since the last fair, the Society has increased their grounds by the purchase of three acres of land, which will be felt as a great aid in affording room for the large turn-out which invariably greets Pontiac on that occasion.

We perceive that the Messrs. Emery & Bros. have just received the great Silver Medal of the United States Society, awarded them last year for their Dynamometer. This dynamometer is considered the best now in use, for testing all kinds of agricultural implements and machinery. We hope to hear that Mr. Daines has received the medal awarded to his tile machine at the same show, as we perceive it noted that a number had lately been struck off at the United States Mint.

Destruction of Insects.—A correspondent of a Pennsylvania paper writes: "I believe I have discovered an effectual remedy for the preservation of all kinds of garden truck from the ravages of worms, bugs, and insects of all sorts, and of whatever character; it is simply this, viz: Take one pint of plaster of Paris, mix into it thoroughly one tablespoonful of spirits of turpentine; then sow the mixture lightly over the vines, plants, &c., early in the morning while the dew is on, once or twice a week, and my word for it, the insects will all be exterminated in a short time. It will effectually clear the grape vine, cucumber and melon vines from insects: and I believe it will prove a radical remedy for the potato rot, the origin of which is an insect."

More Ayrshires for Massachusetts.—Mr. Howard in his letter from Liverpool August 12, states that he has shipped some more Ayrshires for several parties in Massachusetts, and also a thoroughbred mare and a stallion colt, for David Sears, Jr. He says;

"The cattle are all Ayrshires, of the best blood and quality to be had in Scotland. They are from the herds of John Parker, near Irvine, Messrs. Meikle, Reid, and Morton, of Tarbolton, Mr. Alton, of Troon (a relative of the well-known author of the Survey of Ayrshire, Dairy-Husbandry, &c.) late manager for the Duke of Portland, Mr. Kilgour, and Mr. Steele, of Ochiltree, Mr. Roger, of Maybole, and Drew, of Hamilton, Lanarkshire.

The horses are among the best of their breed. The mare is in foal to "Doctor Sangrado," mentioned in my last letter. Her name is "Fly-away Jean;" sire, "Warlike Baylock;" dam, "Susan," by "Richard," &c. I have seen several of her offspring, which are of fine symmetry and action. The colt, "Treasurer," was by "Paymaster;" dam, by "President," &c. He is of good size and well made for strength and constitution—the best of the breed, in these respects, of his age, I have seen in Britain. Both were purchased of Mr. Stephen Kirby, of Thirsk, Yorkshire, the breeder of the colt."

C. T. Alvord of Wilmington, Vt., when he finds that a sow is inclined to devour her pigs, mixes her feed with cider, until she is somewhat intoxicated. This, it seems quiets her nerves, and renders her manageable, besides doing away with her unnatural appetite. Four quarts of good cider, is found a large enough dose.

Winter Oats.—The Sandusky Register notices that a variety of winter oats has been grown by a Mr. Kidd near Sandusky. This gentleman received the seed from Ireland, under the name of the *Towney Oat*. They prove to be almost as heavy as corn to the bushel, and are sown about the same time as winter wheat. A sample of these oats will be exhibited at the Ohio State Fair.

Ayrshires.—We note that fifteen head of Ayrshire cattle, bulls, cows and heifers are for sale at Toronto. Inquiry may be made of Mr. Denison, at the office of the board of Agriculture in that city.

The First Volume Wanted.—Will some of our subscribers look over their back files and see if they have a complete volume one of the MICHIGAN FARMER. The Librarian of the University is desirous of completing his set for that Institution.

The Fourth Volume of American Herd Book.

Mr. L. F. Allen has issued a circular, of which we have been favored with a copy, relative to the Fourth Volume of the American Herd Book, which he is now preparing for the press. A copy of this circular will be sent to any one who applies for it, and who desires to become acquainted with all the details. We give the following extracts, as being the most important to our breeders here:

1st. All pedigrees must be sent in previous to the *first day of December, 1858*, to allow me time to compile them, and issue the book by May 1st, 1859.

2d. Every pedigree must be made out at full length, after the manner of those in the volumes of the American Herd Book, as I cannot encounter the labor and responsibility of making out full pedigrees from short notes, hints and memorandums. The imperfect condition of many private records, required me to do that labor for my previous volumes, which it is now unnecessary to repeat, with such extensive authorities as those volumes before you will afford. I cannot, therefore, accept such imperfect papers, only in cases where your animals or their ancestors have not been previously recorded, either in the English or American Herd-books. Another reason for this is, that every breeder ought to be supposed to understand the lineage of his stock better than a stranger, and consequently he can give their pedigrees with greater accuracy.

3d. Let every individual pedigree be complete in itself, like those in the published Herd Books. State by whom the animal was bred, (if you wish that fact known); the date (by month and year) of its birth; the name and Post Office, (County and State); residence of its present owner; its sex, (this may merely say "Bull," or "Cow," in parentheses, by the side of the animal's name); the color, whether white, red, red and white, red roan, light roan, or roan, simply, without qualification. In roans, where white is the prevailing color, they are *light* roans; where red prevails over the white, they are *red* roans. By referring to the past volumes of the Herd-book, you can not mistake the mode of description, or the tabling the produce of the cows. Do not send me *printed* pedigrees from newspapers, handbills, or catalogues, &c., unless they are in Herd-book form, and complete; nor when they are printed on both sides of the paper, as, if so, they must be copied by me for the printers. The names of bulls occurring as sires in the pedigrees, may be referred to by their numbers, when recorded in the Herd-books, either English or American. When such bulls are not recorded, let their pedigrees be written and referred to *distinctly* under the pedigree to which he is a party. Any unrecorded and unnumbered bull referred to in a pedigree must also be numbered and recorded to properly elucidate such pedigree, and a charge of fifty cents will be made for such bull or bulls. In cases where uncommon labor is necessary for me to find out the pedigree, an additional charge of fifty cents to a dollar each will be made, of which the owner of the animal will be notified at the time.

4th. Every animal presented for record must be *well-bred*; and where evidence of the fact cannot be traced to animals recorded in an existing Herd-Book, *documentary* evidence must be furnished to sustain the fact that they are *true* Short Horns, and are descended from well-authenticated Herd-book animals.

5th. Fifty cents will be charged for each animal recorded in a distinct pedigree by name, excepting animals named in the tables of produce of recorded cows. The record fee, in current money at your place, to be remitted when the pedigrees are sent to me. *In all cases where a pedigree, for insufficiency, cannot be recorded, such pedigree will be sent back, if requested, and the fee returned.*

6th. In making out your pedigrees, *write only on one side of the paper.* Write legibly, and with perfect distinctness, all proper names, as without such writing many names can only be *guessed* at, and important mistakes may occur. Let your lines be quite half an inch apart, and between each pedigree let there be a space of at least two inches blank paper. When pedigrees are written on both sides of the paper, they will be *immediately returned*, as one side of them must, in all cases, be copied in order to print them.

7th. If any extraordinary qualities of milking, in accurate weights or measures, and times, belong to your

cows, or of dead weights of carcasses in slaughtered recorded animals, have been made, they may be noticed; as we claim that the Short Horns are the greatest milkers, and the heaviest beef, of any neat cattle whatever, and such instances carry proof of these facts to the public.

The Markets.

During the month, the markets for farm produce have had a downward tendency, principally from the fact that prices had been pushed up higher than they could be sustained. In the early part of the season the supply of flour and wheat was light, and it made a demand, the effect of which was felt in August. But the export demand falling off at the east, the supply called out by the advance in prices soon filled up the markets, and there has been a gradual decline of orders, and of prices.

Flour of good grades has been selling at \$4.75 to \$5.25, with but little demand to supply buyers. At the same time the amount brought into the city by the several railroads, has been about 25,000 to 28,000 barrels per week making the whole amount equal to over 110,000 bbls. Of this the greater part has come from the Central Railroad.

Of wheat there has been brought in by railroad during the past month nearly 120,000 bushels, and by teams at the rate of 5,000 to 8,000 bushels per week, making the whole receipts nearly 150,00 bushels of wheat. The whole sale price of wheat, free on board of vessels taking it eastward, has ranged from \$1.20 to 1.12. At the present date good white wheat on board is worth \$1.12 to 1.15. In the streets it ranges from \$1.06 to \$1.10, and some parcels of very choice brings as high as \$1.12. The cost of transporting a bushel to New York added on to these prices is: Freight to Buffalo 3 cents; elevation there 1 cent; insurance 1 cent; freight to New York from Buffalo 11 cents; lighterage at New York 1 cent; measuring 1 cent; commission 3 cents, total 19 1/4 cents. Michigan white wheat at the present date is worth in New York from \$1.30 to \$1.35 Good Canadian samples are worth as much. There is a slight margin and it would create a demand were the export trade a little encouraging.

The crop of corn coming in is good. We note however, that our crop in Michigan is earlier than in other states, and that in many places it is not reported as so good. The New York Tribune, seems to think there will be a short crop in Ohio and Indiana. From Illinois the accounts are generally very favorable. The price given for old corn is 58 to 60 cents per bushel, but the tendency is downward. Oats maintain their prices well and retail here mostly at 40 to 42 cents.

The Cattle Market in New York seems to have reached a point when the supply was too great for its consumption. Beef cattle for a short time seemed to be a drug there, and were sold at 6 and 7 cents, making them really worth only 2 cents here. In this market the best beef is now purchased at 3 cents on foot. Rather thin common stock brings only about 2 to 2 1/2 and 2 1/2 cents per lb on foot. Sheep, fit for mutton, and of good quality bring \$2.50 to \$3.00 per head, but the latter rate is only paid for very good ones. Hogs seem to be as good live stock as any on hand, and bring from 5 to 5 1/2 cents when in the shape of pork. Salt pork sells at \$17.50 per bbl, and hams are worth 11 cents and shoulders 8 cents.

Butter is rather better in price, and good quality brings from 15 to 16 cents at retail, but when sold in quantities in crocks, ranges from 12 to 14 cents according to quality.

The Markets.

BREADSTUFFS AND GRAIN.		SEEDS, PLASTER, SALT, &c.	
Flour, bbl.	\$4.75 a 5.50	Clover per bush.	\$4.00 a 5.00
Cornmeal, 100 lbs.	1.50 a	Timothy.	2.50 a 3.00
Buckwheat, 100 lbs.	0.90 a 0.95	Red top.	0.00 a 2.00
Wheat, red, bush.	1.02 a 1.08	Blue grass.	1.25 a 3.00
do white, bush.	1.06 a 1.12	Millet, 0.50	Hungarian grass \$3
Corn, bush.	0.60 a 0.65	Sandusky plaster, bbl.	1.25 a
Oats, bush.	0.38 a 0.40	Grand River.	1.50 a
Barley, per 100 lbs.	1.15 a 1.30	N Y Plaster.	1.13 a
BEEF, MUTTON, &c.		Sandusky water lime.	1.50 a
Beef on foot.	\$2.50 a 3.25	N Y do.	1.31 a
Beef dressed.	4.50 a 5.50	Salt fine bbls.	1.50 a
Sheep, dressed per lb.	0.33 a 0.05	do coarse.	1.75 a
Sheep on foot.	1.50 a 3.00	MISCELLANEOUS.	
Hogs pr lb 6c, pr 100.	6.00 a 5.50	Apples per bush.	0.00a 0 00
Turkeys.	1.00 a 1.25	White fish, half bbl.	3.25 a
Chickens, pair.	0.25 a 37 1/2	White beans per bush.	0.55 a 0.00
Geese.	37 1/2 a 0.50	Sheep pelts.	0.25 a 0.30
Eggs per doz.	9 a 16	Hay, timothy, ton.	5.50 a 6.00
Butter, per lb fresh.	12 a 14	Common.	8.00 a 5.00
do firkin.	10 a 12	Honey.	14 a 0.16
Cheese per lb.	7 a	Potatoes, new	25 a 0.30

STRAWBERRIES, Superior Trees, &c. — Wm. R. Prince & Co., Flushing, N. Y., will their New Catalogue, with reduced rates; Fruit and Ornamental Trees, New Native Grapes, Raspberries, Lawton and other Blackberries, Roses and Bulbous Roots of the most solid varieties, to applicants who enclose stamps.

STRAWBERRIES—Longworth's, McAvoy's and 20 other standard varieties \$1 per 100, Wilson's Albany \$1.50, Hooker, Peabody and Eclipse \$2.00, Princes Magnate, Imperial Scarlet and Ladies Pine, finest of all \$2.50 per 100, Diadem, Le Baron and Imperial Crimson \$1 per doz. For other prices and full descriptions of all see our Strawberry Catalogue. Oct 11

THE LAWTON BLACKBERRY

Is unique, and not, as some have been led to believe, the common "New Rochelle Blackberry," improved by cultivation. It differs in shape, size and quality from all others. Is perfectly hardy, enduring the severest winters without protection. The fruit is delicious, having small seeds in proportion to its size; is a prodigious bearer, and in good farming soil, the stalk, leaf, flower and fruit, will grow of mammoth proportions.

For the convenience of Clubs, and those who take orders for plants, they will be sent packed in boxes, put up in clusters of one dozen, without charge for package, at the following rates:—A box of 1 dozen, \$2; a box of 3 dozen, \$5; a box of 8 dozen, \$10. To prevent imposition, which has been most extensively practiced, every package will be marked and branded, and purchasers from the undersigned will thus secure the genuine variety, without admixture, and may enjoy this delicious fruit the second summer in perfection. The money should accompany the order, with name and address distinctly written. N. B.—No itinerant plant sellers or traveling agents are employed to sell the plants from my grounds. Address **WILLIAM LAWTON,**

Oct 21 No. 54 Wall-street, New York,
Or New Rochelle, N. Y.

FRUIT CULTURE FOR THE MILLION!

JUST PUBLISHED.

A HAND-BOOK OF FRUIT-CULTURE; BEING A Guide to the Culture and Management of Fruit-Trees, with Condensed Descriptions of many of the best and most Popular Varieties in the United States. Illustrated with nearly a hundred Engravings. By THOMAS GRIGG.

PART FIRST CONTAINS:

INTRODUCTORY REMARKS, TRANSPLANTING,
PRELIMINARIES TO PLANTING, AFTER CULTURE.

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THE DIFFERENT KINDS OF FRUIT.

ALMONDS.	APRICOTS.	APPLES.
BLACKBERRIES.	CHERRIES.	CURRENTS.
GOOSEBERRIES.	GRAPES.	NECTARINES.
PEACHES.	PLUMS.	PLUMS.
QUINCES.	RASPBERRIES.	STRAWBERRIES.

THE APPENDIX

Contains a vast amount of miscellaneous matter relative to propagating and raising fruit, preserving Fruits, and other things of interest to housekeepers.

Sent prepaid by first mail, in paper, for 30 cents; in muslin, 60 cents. Address **POWELL AND WELLS,**
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FRUIT TREES.

A LARGE ASSORTMENT of Fruit Trees of Extra size of all kinds, also
50,000 Evergreens of various kinds and sizes up to 7 or 8 feet high. All hardy.

Greenhouse Plants.

Herbaceous Perennial flowering plants, hardy Monthly Roses, of the most approved variety for sale by the hundred or thousand. Shrubs, Deutzias, Forsythias, Wiegandias, Double Altheas. Choice varieties of Currant, Lawton Blackberries, Strawberries, Raspberries, Asparagus Roots, Pie Plant, &c. &c., all which will be sold very low by
Detroit, Aug. 1853. **HUBBARD & DAVIS.** Sept 13.

Syracuse Nurseries, Syracuse, N. Y.

250,000 APPLE TREES, 2 to 4 yrs. old standard and dwarf;
250,000 PEACH 1 and 2 yrs. old do do
50,000 CHERRY do 1 and 2 yrs. old do do
100,000 PEACH, APRICOT, NECTARINE and PLUM Trees;
80,000 ISABELLA, CATAWBA and CLINTON Grapes;
DELAWARE, DIANA, REBECCA, and CONCORD Grapes;
75,000 GOOSEBERRY SEEDLING Gooseberries will not mildew;
50,000 CURRANTS, fifteen varieties, old and new;
25,000 LAWTON BLACKBERRIES, largest and most productive;
RASPBERRIES and Strawberries, best popular sorts;
ORNAAMENTAL TREES, ROSES, SWEETBERRY, DAHLIAS, BULBS;
EVERGREEN TREES, choicest hardy kinds, 1 to 6 ft; superb;
APPLE PEACH and CHERRY SEEDLINGS, healthy strong plants;
HEDGE PLANTS, Privet, Buckthorn, and Honey Locust; all well grown and unexcelled by the productions of any other Nursery.

For descriptions and prices, wholesale and retail, see

OUR SEVERAL CATALOGUES,

Forwarded on receipt of a Stamp for each, viz. No. 1, descriptive of all our productions; No. 2, descriptive of Fruits; No. 3, descriptive of Ornamental Trees, Roses, Shrubbery, &c., and No. 4, a Wholesale Catalogue for Nurserymen and large dealers.

THEOPH. SMITH & HANCHETT.

Sept. 1, 1853. Oct 11

BUSHNELL & HUNSON, (Successors to Seth A. Bushnell) will sell for cash or credit any or all their entire stock of Durham, consisting of their prize bull, Hubback, twenty young bulls, forty cows and heifers, jacks and jennets, South Down sheep, Chester White and Saddle pigs.
Hartford, Trumbull Co., Ohio, Oct. 1st, 1853. 11

ANDRE LEROY'S
Nurseries at
ANGERS, FRANCE.

THE proprietor of these Nurseries—the most extensive in Europe—has the honor to inform his numerous friends and the public that his Catalogue of fruit and ornamental trees, shrubs, roses, seedlings, fruit stocks, &c., for the present season, is now ready and at their disposal.

The experience which he has acquired in the last ten years by numerous and important invoices to the United States, and the special cultures which he has established for the market upon an area of over 500 acres are for his customers a sure guarantee of the proper and faithful execution of their orders.

Apply as heretofore to F. A. Bruquiere 138 Pearl St., New York his sole Agent in the United States.

NOTE—All advertisements or circulars bearing the name of Leroy Angers must not be considered as emanating from our house if they do not at the same time mention that Mr. F. A. Bruquiere is our Agent. Address **F. A. BRUQUIERE**, New York.

ANDRE LEROY, Angers, France.

400,000 Apple Trees for Sale.

A Rare Chance for Persons Commencing A Nursery.

250,000 1 year old apple trees from graft.
150,000 2 " " " "
40,000 Cherry Seedling, 1 year.
20,000 Quince Stocks Angers from Cuttings.
50,000 Currants, assorted, well grown.
50,000 Catwba Grape vines, 1 year.
40,000 3 year old Apple Seedlings.
150,000 1 " " " selected.
40,000 Evergreens, 12 to 24 inches, of Norway and Balsam Spruce, Fir, Larch or Corsican Pine, White Pine, Chinese and American Arbor Vitae, &c.
2,000 Balsam Fir or Spruce 5 to 8 feet high splendid. Specimens well furnished. **A. FAHNESTOCK & SONS.**
Toledo, August 16th, 1853. 21

Toledo Nurseries.

A. FAHNESTOCK & SONS, Proprietors.

WE OFFER to our patrons and the trade generally, our usual assortment of Nursery products, viz:

Apple, Pear, and Cherry trees, well grown and thrifty, both Dwarf and Standard. Plums, Peaches, Apricots, Nectarines, &c. Smaller Fruits—Currants, Raspberries (including Catawba) Gooseberries, Strawberries, (all the new and popular sorts) Grape Vines, including Rebecca, Delaware, Northern Muscadine, Concord, Diana, Isabella, Catawba, Clinton, &c. Rhubarb—Lianens, Cahoons, Victoria, Downing's Colossal, &c.
Osage Orange 2 years old \$3 per 1000, \$25 for 10 000. Evergreens. Ornamental trees. Roses, Dahlias, Paeonies, Phloxes, Spireas, Honeyuckles, &c in abundance.

Orders solicited. Send for a Wholesale or Descriptive Catalogue and compare our prices with other Nurserymen and if you can save either in transportation or price or both, order from us direct, as we employ no agents to sell trees for us.

All articles securely packed and forwarded as directed.

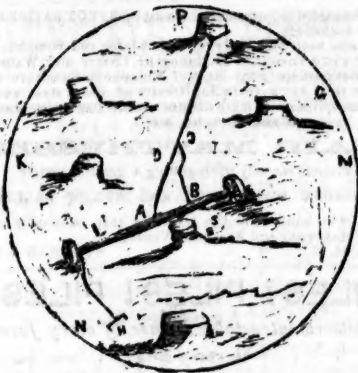
Toledo, August 16th, 1853. 21

DR. H. BIGELOW, OCULIST,

(Office Room No. 9 Sheldon Block opposite the Peninsular Bank, Jefferson ave., Detroit, Mich.)

Respectfully announces to the public generally that he is now engaged in treating the various diseases of the Eye, with much success. Many Certificates and recommendations might here be given, but such things are so common at this day, that it is deemed sufficient

merely to say to those afflicted, come and SEE H's treatment the same as that practised by the late Dr. George Bigelow. May, '57, 1r.

THE PREMIUM STUMP PULLER

THE WILLIS STUMP PULLER is the most powerful and most economical machine in use for pulling stumps; and will clear a field in less time than any other invention of a like kind.

Twenty three stumps have been pulled with this Machine in an hour and fifteen minutes.

The undersigned will sell machines and rights to use and manufacture in any part of Michigan except the counties of Hillsdale, Branch, Wayne, Washtenaw, Jackson, Calhoun, Kalamazoo, Van Buren, Macomb, Genesee, Shiawassee, Saginaw, Tuscola and St. Clair, which are already sold.

All necessary information as to prices, and mode of using, will be given on application to **DAVID BLACKMAR, Ypsilanti.**

or to **R. F. JOHNSTONE, Editor Michigan Farmer.**

The Machines are manufactured at the Detroit Locomotive Works from the best Lake Superior Iron.

BLANCARD HOUSE.

BROADWAY & TWELFTH STREET, NEW YORK.

THIS SPACIOUS AND ELEGANT ESTABLISHMENT is located in the most fashionable part of the City, on the highest point of ground south of UNION SQUARE, making it the most pleasant and healthful location in the Great Metropolis.

THE ROOMS are finely ventilated, well lighted, and many of them constructed in suits of Parlors and Chambers communicating with closets, baths, and gas, suitable for families, and parties travelling together.

MANY LINES OF STAGES pass the door, and the FOURTH AVENUE CARS run within one block, by which the lower (or business) part of the City is reached in eighteen minutes.

THE HOUSE has been thoroughly renovated and refurnished, and is now open for the reception of guests.

THE APPOINTMENTS and ARRANGEMENTS throughout are extensive and liberal, and no extortion will be practiced or tolerated by the management.

THE LARDER and CELLARS will at all times be stocked with the best and our patrons are assured that no pains or expense will be spared to make their stay at the BLANCARD HOUSE in all respects agreeable.

THE PRICES for full board at the Table d'Hôte will be limited to Two Dollars per day. By the week at lower rates.

Rooms will be let separately, if desired, and meals served by the card, either in private parlors or at ordinary.

ROOMS WITHOUT BOARD, by the day or week. MEALS served at all hours to order.

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JOHN M. BLANCARD, late of the "Pavillion" at New Brighton. C. J. MAC LELLAN, late of "Jones," and "United States" Hotels, Philadelphia.

\$500 TO \$2,000 A YEAR!

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From \$5 to \$10 per day can be cleared where perseverance, industry and skill are exercised.

Those desiring Agencies will for particulars address

C. M. SEXTON,
25 Park Row, New York.

DRAIN TILE!

WE keep constantly on hand the different kinds of Drain Tile At **PENFIELD'S**, 108 Woodward Ave.

EVERY BODY ATTENTION.

Just Published a new and important work on Farriery entitled, "EVERY MAN HIS OWN FARRIER."

It is truly valuable book is a Reprint of a Celebrated English work written by one of the most scientific men of the Royal Veterinary College in England, and a man that has had Forty Years Practical Experience in the Treatment of all diseases incident to that most noble animal, the Horse. It was published under the sanction of the Royal Veterinary College for the benefit of the English Government and has been reprinted and published by E. & Wm. Wallington, for the benefit of the American public. It is a book of over three hundred octavo pages, printed in elegant style in gilt embossed covers and contains over 200 valuable recipes for the cure of all the various diseases of the horse. It gives the cause and symptoms of all the Diseases in a style that all can understand; following each Disease with its own recipe all of which are known to effect a cure if applied in season, according to the Directions. It is adapted to the wants of all classes of persons, the Farmer, the mechanic, the merchant, the professional man, and all owners and dealers in horses.

Hundreds of Dollars annually in horses and cattle, may be saved by consulting this work. We think we may safely assert that this is by far the most valuable work on the diseases of the horse extant.

READ THE FOLLOWING.—We the undersigned take pleasure in saying that in our opinion no work of the kind extant has higher claims to the confidence of horse owners and breeders than this, as in our opinion the remedial agents therein recommended are eminently adapted to the cure of the diseases therein described.

We hope the enterprising publishers will meet with a rapid sale of their book, for we think it to be a very excellent work.

Eberbach & Co., Ann Arbor J. B. Newland.
R. I. Speecheely, Hackman. Geo. Sutton, Esq.
James Kingsley, Esq. Rufus Knight, Esq., and others.

PRICE \$1.50.

Published by **E & WM. WALLINGTON,**
Ann Arbor Mich.

Geo. S. Hazen sole agent for the United States all orders addressed to Box 110 Saline, Mich., will meet with prompt attention.

FARM FOR SALE.

A valuable improved farm is offered for sale located in the town of Waterloo, Jackson county, consisting of 180 acres of choice land of which 50 is covered with a good quality of timber and 20 is marsh meadow; 116 acres is arable and 76 of these are seeded down to clover. The whole is well inclosed with fences, and has a good frame house, framed barn, and other fixtures with three wells of good water. There is also an orchard of 200 trees of six to fifteen years standing; and several varieties of cherries, peaches and plums, and twelve varieties of cherries all in bearing. There are also some quince trees and four varieties of grapes.

With the farm will also be sold some choice stock full bloods and grades, should the purchaser desire to purchase, two teams of horses and some fine woolled sheep, and Suffolk and Essex pigs. For farther particulars apply by letter or otherwise to

CYREL ADAMS,

Portage Lake, or to

R. F. JOHNSTONE,
Editor Mich. Farmer, Detroit.

WILSON'S ALBANY SEEDLING.

BEST AND MOST PROLIFIC STRAWBERRY!!
YIELDS 200 BUSHELS PER ACRE.

UNEQUALLED FOR SIZE, COLOR, FLAVOR, FIRMNESS, FRUITFULNESS, and LONG CONTINUED RIPENING.—is perfectly hardy and quite early. Plants set out this Fall or early in the Spring will bear in season of 1879.

Can be transplanted safely during the whole of September and October. Circular, with engraving of fruit &c., sent to all applicants enclosing stamp. Price packed and delivered in Albany, \$10 per thousand, \$1.50 per hundred, \$1 for fifty. Orders with cash promptly attended to by

Sept 24

W. M. RICHARDSON,
96 South Pearl Street, Albany, N. Y.



Ayer's Pills

Are particularly adapted to derangements of the digestive apparatus, and diseases arising from impurity of the blood. A large part of all the complaints that afflict mankind originate in one of these, and consequently these PILLS are found to cure many varieties of disease.

Subjoined are the statements from some eminent physicians, of their effects in their practice.

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From Dr. E. W. Cartwright, of New Orleans.

"Your Pills are the prince of purges. Their excellent qualities surpass any cathartic we possess. They are mild, but very certain and effectual in their action on the bowels, which makes them invaluable to us in the daily treatment of disease."

FOR JAUNDICE AND ALL LIVER COMPLAINTS.

From Dr. Theodore Bell, of New York city.

"Not only are your PILLS admirably adapted to their purpose as an aperient, but I find their beneficial effects upon the Liver very marked indeed. They have in my practice proved more effectual for the cure of *bilious complaints* than any one remedy I can mention. I sincerely rejoice that we have at length a purgative which is worthy the confidence of the profession and the people."

DYSPEPSIA — INDIGESTION.

From Dr. Henry J. Knox, of St. Louis.

"The PILLS you were kind enough to send me have been all used in my practice, and have satisfied me that they are truly an extraordinary medicine. So peculiarly are they adapted to the disease of the human system, that they seem to work upon them alone. I have cured some cases of *dyspepsia* and *indigestion* with them, which have resisted the other remedies we commonly use. Indeed I have experimentally found them to be effectual in almost all the complaints for which you recommend them."

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From Dr. J. G. Green, of Chicago.

"Your PILLS have had a long trial in my practice, and I hold them in esteem as one of the best aperients I have ever found. Their alternative effect upon the liver makes them an excellent remedy, when given in small doses, for *bilious dysentery* and *diarrhœas*. Their sugar-coating makes them very acceptable and convenient for the use of women and children."

CONSTIPATION — COSTIVENESS.

From Dr. J. P. Vaughn, Montreal, Canada.

"Too much cannot be said of your PILLS for the cure of *costiveness*. If others of our fraternity have found them as efficacious as I have, they should join me in proclaiming it for the benefit of the multitudes who suffer from that complaint, which, although bad enough in itself, is the progenitor of others that are worse. I believe costiveness to originate in the liver, but your PILLS affect that organ and cure the disease."

IMPURITIES OF THE BLOOD — SCROFULA — ERYSIPELAS — SALT RHEUM — TETTER — TUMORS —

RHEUMATISM — GOUT — NEURALGIA.

From Dr. Ezekiel Hall, Philadelphia.

"You were right, Doctor, in saying that your PILLS *purify the blood*. They do that. I have used them of late years in my practice, and agree with your statements of their efficacy. They stimulate the excretories, and carry off the impurities that stagnate in the blood, engendering disease. They stimulate the organs of digestion, and infuse vitality and vigor into the system. Such remedies as you prepare are a national benefit, and you deserve great credit for them."

FOR HEADACHE — SICK HEADACHE — FOUL STOMACH

— PILES — DROPSY — PLETHORA — PARALYSIS — FITS — &c.

From Edward Boyd, Baltimore.

DEAR DR. AYER: I cannot answer you what complaints I have cured with your PILLS better than to say all that we ever treat with a *purgative medicine*. I place great dependence on an effectual cathartic in my daily contest with disease, and believing as I do that your PILLS afford us the best we have, I of course value them highly."

Most of the PILLS in market contain Mercury, which, although a valuable remedy in skillful hands, is dangerous in a public pill, from the dreadful consequences that frequently follow its incautious use. These contain no mercury or mineral substance whatever.

Prepared by Dr. J. AYER,

PRACTICAL AND ANALYTICAL CHEMIST,

LOWELL, MASS.

And sold by J. B. Farrand, Detroit, and by all Druggists every where. Feb 28-ly

FURNITURE WAREHOUSE, ON JEFFERSON AVENUE,

BELOW MICHIGAN EXCHANGE, DETROIT.

The Subscribers keep constantly on hand a large stock of

ELEGANT FURNITURE, Both Modern and Antique Styles; in Rosewood, Mahogany and Domestic Wood.

Those wishing rich and fashionable Furniture, will always find a great variety to select from—equal in every respect to anything in the Eastern market. Being in constant receipt of Pattern Pieces from the

FASHIONABLE MAKERS IN NEW YORK

they are enabled to guarantee the most PERFECT SATISFACTION to their customers.

They also keep constantly on hand a large and complete assortment of Plain Furniture of Mahogany, Cherry and Walnut. In short, every article in the line of Household Furniture will be found in their Stock, including Chairs of every style and price, from four shillings to sixty dollars each. The subscribers now have on hand, and make to order, best

HAIR MATTRESSES.

Their customers can rely upon getting a genuine article.

CORN-HUSK MATTRESSES AND STRAW PALLIASES

constantly on hand. For the trade we keep constantly a large stock of Mahogany and Rosewood Veneer. Jan '68, ft. STEVENS & ZUG.

PILES! PILES! PILES!

This hitherto intractable disease, of every form and in every stage,

CURED BY EXTERNAL APPLICATION ONLY.

DR. CAVANAUGH'S PILE SALVE

WILL never fail in giving immediate relief and positively curing the worst and most obstinate cases of Hemorrhoids or Piles. It is the only

INFALLIBLE REMEDY KNOWN

here or elsewhere for the Piles, and is the result of years of patient study and investigation.

Sufferers from Piles now have a remedy at hand which will

STAND THE TEST OF TRIAL,

without a fear of failure on its part, to do all the proprietor claims for it.

Full directions accompanying each box; and all that is requisite is strictly to observe them, and a cure is certain to follow.

The proprietor refers to the following testimonials from gentlemen of character and standing, who have voluntarily given their certificates in its favor, in regard to its efficacy in their own cases. Read them.

The following is from one of the most reliable citizens of Chicago, the late Treasurer of Cook Co., Ill.:

Chicago, July 26, 1855.

DR. CAVANAUGH—Dear Sir, I wish hereby to make known to the afflicted that I have been troubled with the Piles for twenty years or upwards, and at times most severely. And during a recent and exceedingly painful attack, a friend procured a box of your Salve and asked me to give it a trial. I did so. Not, however, with the expectation of benefitting my disease, for truly, I had tried so many applications I had lost confidence in all. But in making use of your Salve, I soon found that it was doing me good; and really it is incredible to myself, that with only about two weeks use of your Salve, I am, so far as I can judge, a well man.

I most cheerfully make this statement, believing it due both to yourself and such as may be afflicted with the most trying and painful disease. I do not hesitate to say that I consider your preparation an invaluable remedy for the Piles.

Most sincerely yours,

H. N. BEALL.

The Hon. Richard Yates, late member of Congress from the Springfield, Ill., District, says:

JACKSONVILLE, Ill., Nov. 15, 1851.

DR. THOS. H. CAVANAUGH—Dear Sir: The preparation, Cavanaugh's Pile Salve, which you furnished, I found of great service producing an easy and speedy cure. I do not hesitate to recommend it as an invaluable remedy for the Piles.

Respectfully,

RICHARD YATES.

Also Dr. T. H. Cavanaugh's Celebrated

GREEN SALVE.

Price \$1 per box. For sale by H. & L. SIMONEAU, Wholesale Agents.

Dec. 1yr DR. T. R. CAVANAUGH, Sole Proprietor, St. Louis, Missouri.